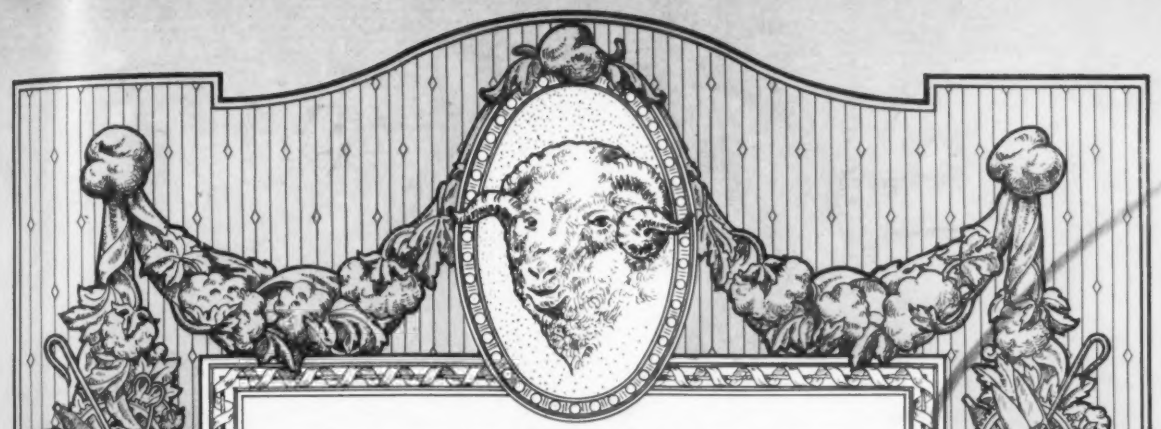

TEXTILE WORLD RECORD

March 1915

SPECIAL FEATURES

Estimating the Cost of Woolen Goods

Wool and the British Empire

Fancy Knitting

Building Construction Costs

Modern Mordant Dyeing

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LORD & NAGLE CO., Publishers

BOSTON MASS.

Vol. XLVIII No. 6

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The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

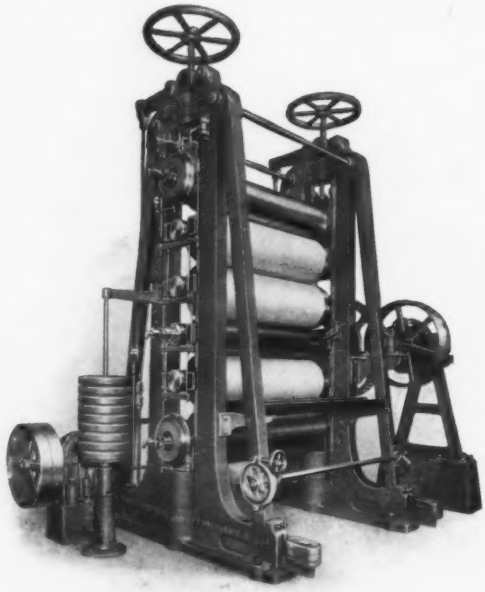
BUILDERS OF

Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



6 Roll Hydraulic Calender

ROLLER, CHASING, HYDRAULIC, EMBOSSING AND FRICTION CALENDERS AND MANGLES

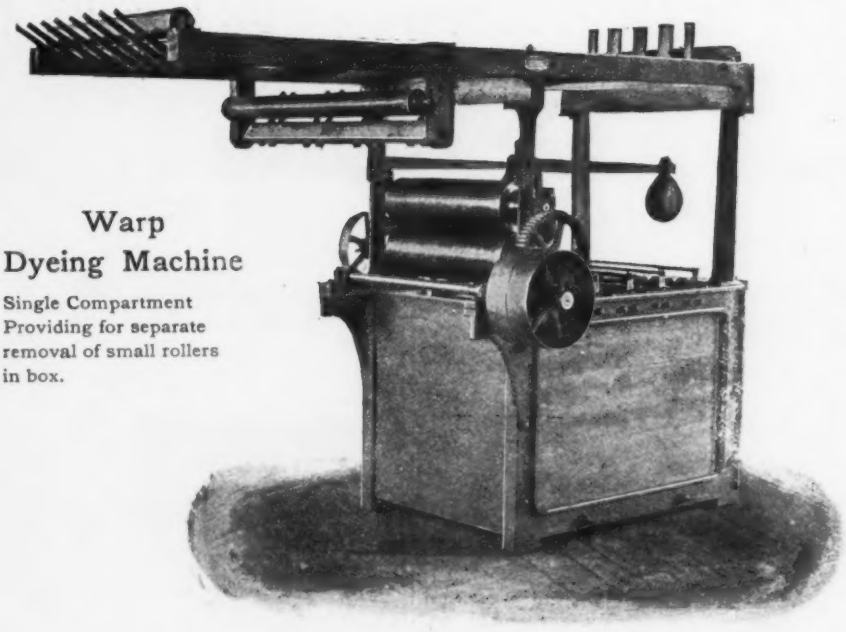
Cotton, Paper, Husk, Iron, Steel, Rubber and Brass Rolls, and our

SPECIAL COMBINATION COTTON-HUSK ROLLS

Bleaching Kiers with Patent Circulators

for

RAW STOCK, YARN, WOVEN AND KNIT GOODS



Warp
Dyeing Machine

Single Compartment
Providing for separate
removal of small rollers
in box.

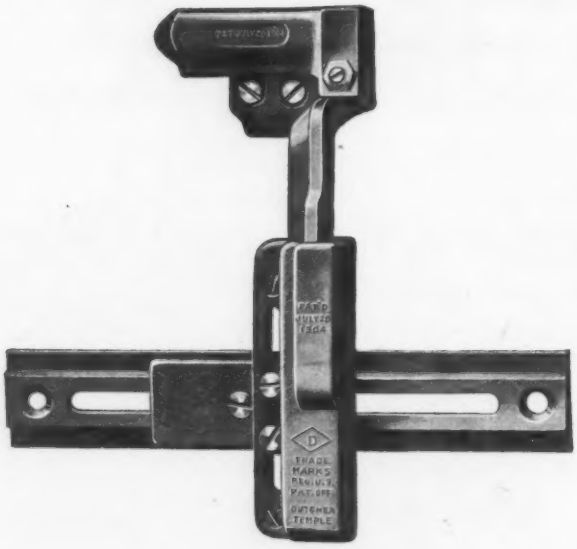
Bleaching, Dyeing, Drying, Finishing Machinery

for all textile fabrics.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office, Room 417, Industrial Trust Building.



DUTCHER TEMPLES

Trade Mark Reg. U. S. Pat. Off.

DRAPER COMPANY

SOLE MANUFACTURERS

HOPEDALE MASS.

DRAPER COMPANY

Northrop Loom Repairs

FIT

Northrop Looms

TRADE MARK REGISTERED

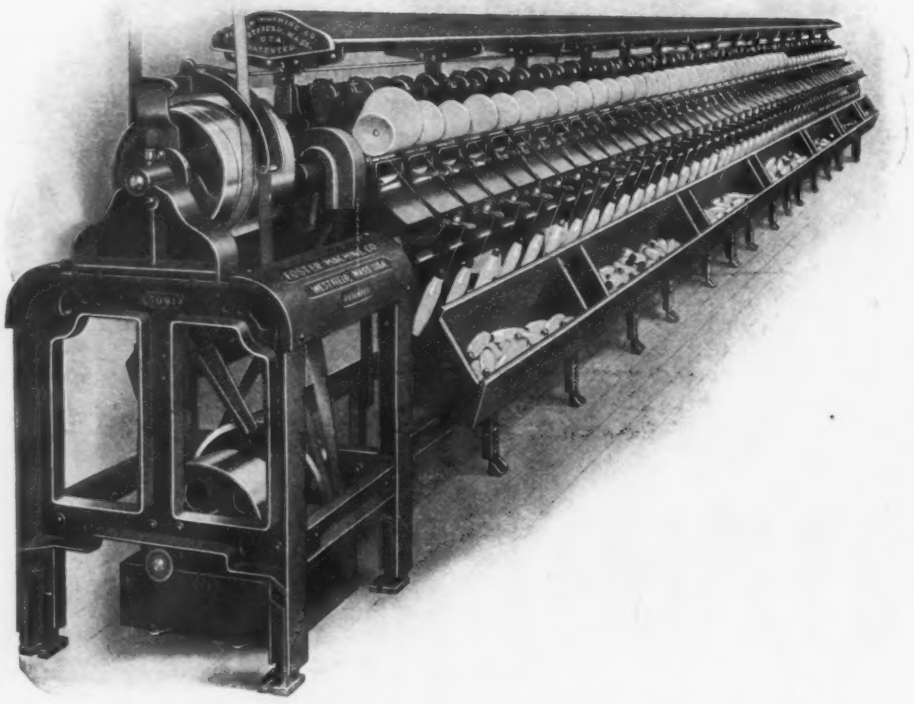
MADE BY

DRAPER COMPANY

Hopedale Mass.

J. D. CLOUDMAN Southern Agent
40 South Forsyth Street Atlanta Georgia

The Foster Model 30



The Model 30 Cone Winder has every good principle of former Models incorporated in it. In addition, the new Model is more flexible of adjustment and may be set to produce finished cones of much greater taper than former Models, although paper cones of the same or lesser pitch are used.

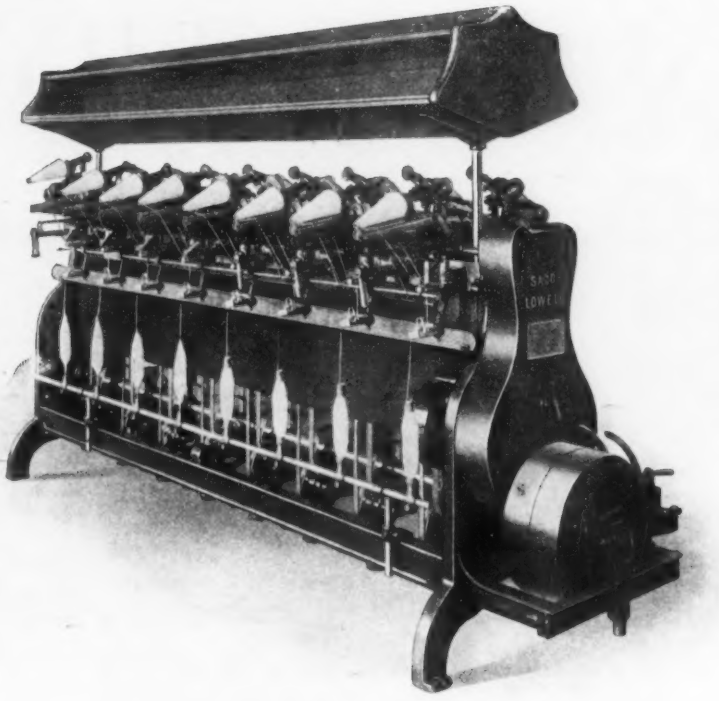
Foster Machine Company

Westfield, Massachusetts

JOHN HILL, Southern Agent, 1014 Healey Bldg., Atlanta, Ga.

Saco-Lowell Shops

TEXTILE MACHINERY



Camless Cone Winder

Effects saving in cost of repairs and operating expenses.
Increases capacity of operative,—decreases cost of winding per pound.
Duplicate work from every spindle positive.
Compact construction and large product per spindle insures appreciable saving in floor space and lessens first cost of installation.

Executive Offices:—77 Franklin St., Boston, Mass.

Southern Agent:—Rogers W. Davis, Charlotte, N. C.

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IMPORTING ENGINEERS

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Long Distance Telephone—
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TEXTILE MACHINERY

Sole Agents in the United States and Canada for

PLATT BROS. & CO., Ltd.

OF OLDHAM, ENGLAND

By far the Largest Makers in the World of

Cotton, Woolen and Worsted Machinery

Also Sole Agents in U. S. and Canada for

MATHER & PLATT, Ltd.

Equipment of Complete Works for

BLEACHING, CALICO PRINTING, DYEING AND FINISHING

Patent Mechanical FILTERS for Town Supplies and all Industrial Purposes

Wool Washing and Drying Machines, Napping Machines, Sykes' Card Clothing for Cotton, Critchley's Card Clothing for Woolen and Worsted, Wilson Bros'. Bobbins, etc., Harding's Pins, Fallers and Circles, Dronsfield's Grinding Machinery and Emery Fillet; Double Loop Bands, Scroll Banding etc.; Condenser and Gill Box Aprons, etc.

THE U. S. GOVERNMENT

and the

MANCHESTER TESTING HOUSE

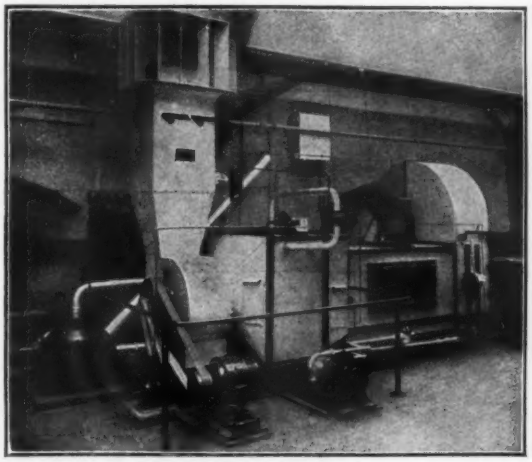
are

"Carrier Equipped"

In 1912, the Testing House and Laboratory of the Manchester (Eng.) Chamber of Commerce selected the Carrier System in preference to all others,—

and now

the Treasury Department has placed a contract with us for equipping the Testing Room at the Appraisers' Warehouse in New York, with a complete system, after a most searching and thorough investigation by that Department's engineers and scientists, and upon the advice of the Bureau of Standards.



The Carrier System was selected in each case because it was the only system that controlled both temperatures and humidities, and would humidify and dehumidify as required.

Our Engineer or catalog will call upon your request

Carrier Air Conditioning Co.

Of America

No. 39 Cortlandt Street, New York City

NEW ENGLAND
E. T. LYLE, Mgr.
176 Federal St.
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A. E. STACEY, Jr., Mgr.
Ft. Dearborn Bldg.,
Clark and Monroe Streets

BUFFALO, 490 Broadway

PHILADELPHIA
E. T. MURPHY, Mgr.
734 Real Estate Trust Building

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Arthur R. Sharp, Treas.; Thomas G. Cox, Agent

Southern Office, Greenville, S. C., Edwin Howard

Works at Taunton, Mass.

Reg. U. S. Pat. Off.

Why it is costly to use imitations of Rice's

There are a number of "mill-whites" on the market, all of them open imitations of the original, Rice's Gloss Mill-White.

These imitations are all *varnish* gloss paints, whereas Rice's is an *oil* paint, giving a glossy tile-like finish, made by a special process, *discovered by and known only to us.* It is *not* a cold water paint but can be applied over old cold water paint.

Varnish gloss paints dry too brittle, and are liable to crack and peel. They may look as white as Rice's when first put on, but those who use them soon discover that they turn distinctly yellow.

Now, what is the use of painting ceilings and walls with a gloss paint which very soon turns yellow and which is liable to crack and peel? It would be more economical to use whitewash, for then the cost of repainting would be less.

Guaranteed to Remain White Longest

If you use Rice's, you are protected. We guarantee that if Rice's does not remain white longer than any other gloss paint, applied at the same time, and under the same conditions, *we will give, free, enough Rice's to repaint the job with one coat.* We also guarantee that, properly applied, Rice's will not flake nor scale. You cannot lose under this guarantee.

Write for Booklet "The Yellow Peril" and Sample Board

Sold direct from factory

Sold direct from our factory in barrels containing sufficient paint to cover 20,000 square feet—one coat.

RICE'S GLOSS MILL-WHITE

U. S. GUTTA PERCHA PAINT CO.
20 Dudley Street, Providence, R. I.

On concrete surfaces

On inside concrete, Rice's Granolith makes the best possible primer for a second coat of Rice's Gloss Mill-White—giving a tile-like enamel finish at no more expense than lead and oil paint.

Rice's Granolith

Parks' Piping Parables

"Realizing that most of it goes up chimney anyhow, let the heat in your boiler so shine, that the rest doesn't go down the sewer."

Knavery Not Confined to Money

If knavery were only confined to money—actual cash—it could be tolerated and this world might not be so benighted; likewise The G. M. Parks Company would have little use for being, and the editor wouldn't need to conjure the muses monthly to remind you of that same.

See what knavery is responsible for!

A man named Shakespeare once voiced these same sentiments: "who steals my purse steals trash"—thereby anticipating me some few hundred years and proving conclusively that had he lived in this age he would perforce be in the piping business.

Where was I?

Oh—knavery, thievery, graft or whatever you may call it. We forget that we cheat time and wonder why we are so rushed.

This is the foundation on which efficiency in production, in operation has been builded and grown.

And the kind of piping that we do—and we say it at the expense of repetition—is a reflection of that very spirit.

Take a single instance: there was once a concern which had quite a power plant, including the usual boilers and engines. In addition, a condenser recently installed; put in to save money. On the face of it, it did save money, too, and when we came along telling that its use in this particular case was expensive, we came mighty near being as unpopular as an also-ran.

The prospect expatiated that he knew what his coal bills were before he installed the condenser and after, and had figures to prove that we were consummate dam phools to come to a man of intelligence with a cock and bull story like that.

Prayerful Consideration Brings in the Order

But here was a case where circumstantial evidence didn't convict. This prospect had a continued use for steam in a dye-house that was a heat sucker. But when we said exhaust steam for that—he chided us again, not in anger, but in sorrow; that so seemingly intelligent a house should presume to tell him who had been dyeing goods before we were born that our method was feasible.

So we labored with him in prayer. Asked him what it was that did the work and were informed with some punctuation that it was the heat in the steam.

That was our lead—and we had one or two trumps that hadn't been sprung. So out came the steam tables. Steam tables are mystifying enough to the uninitiated; to think that anyone who just puts up pipes will resort to anything so scientific as a steam table!

And so he was shown by people even older than he was, that steam at 100 pounds hasn't so much more virtue when it comes to heat, than steam at two pounds.

What it does have is more kick, and inexperienced pipers with 100 pounds of steam back of 'em can make steam go any old place. Scientific piping really cuts very little ice under these conditions. One hundred pounds will kick it round a veritable maze of pipe and still get away with it.

But this man said it was heat that did his work. And with his own argument as a boomerang, we asked him why he didn't take the heat—heat, mind you—that he was just throwing away und make it do the work. "Gosh, you can't do that," said he, "with one-inch pipe."

Intangible Heat Units

"No, you can't; but if it's a question of heat, we can enlarge the pipes to get the same amount with two pounds back pressure on your engine, as you get now with a hundred pounds from the boiler direct. That takes some figuring and some experience which is what we have been trying to say for some time only the opportunity didn't seem to be just opportune.

Gee—I never knew we were so patient before.

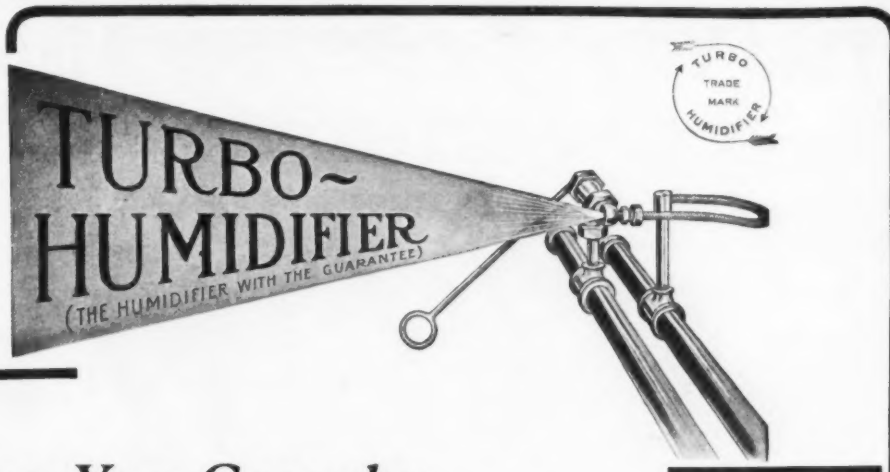
Well you may not believe it, but finally this man came across; saw the light and the job was done and when we got through—he had boilers; and that condenser that he thought so much of, for sale.

And not only that, but a friend of his up the valley had his plant changed too—and not only that—well that's the kind of work that's interested us ever since.

And may I add that a similar problem is the kind of a job we would tackle some day for you—when you are looking, too.

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts



Are You Grouchy— On The Humidifying Question?

Are you dissatisfied with unsanitary systems that use second-hand water, that have innumerable contraptions, such as casings, cloths, mantles, drains, strainers and other moving and, therefore, trouble-making parts.

Are you (humidifyingly speaking) a pessimist?

The Turbo Will Make You An Optimist

The Turbo is the troubleless humidifier. Get it and your humidifying problem is settled. The Turbo has no trouble-causing parts—no unsanitary features.

And it does Humidify. It gives you the degree of humidification ***you*** need in ***your*** mill. That's why it is "The Humidifier with the Guarantee."

Let the Turbo—put back the weight that was in the fabric when you bought it—that will pay for the system—the other benefits are "velvet".

The proof of what we "claim" as facts is in the Turbo Catalog. Shall we send it? Or an engineer? or both? Asking implies no obligation.

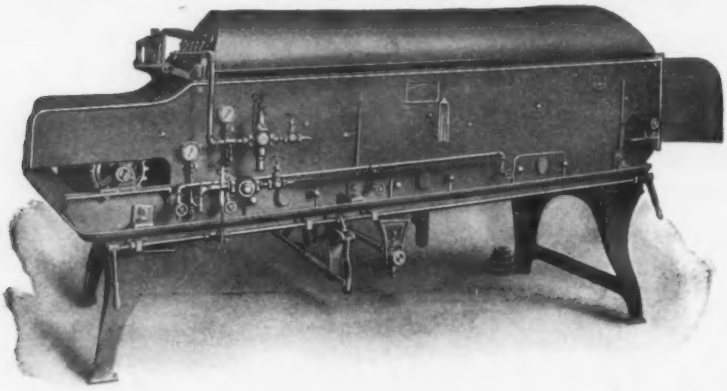
The G. M. Parks Company

Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building, Charlotte, N. C. **J. S. COTHRAN, Mgr.**

The Yarn Conditioning Machine

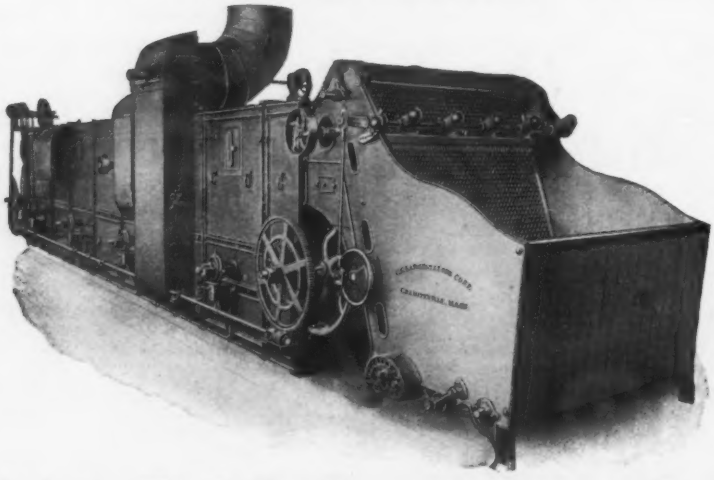
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

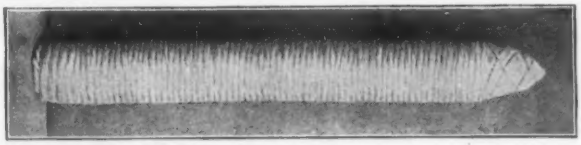
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



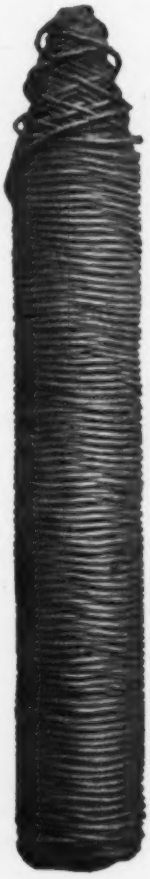
Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.

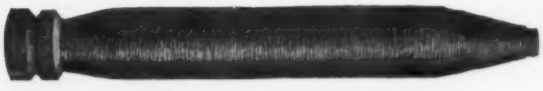


No. 2

No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long. Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.



No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.



No. 1 No. 4 No. 3

OSWALD LEVER CO., Inc.

13th and Cumberland Sts., Philadelphia, Pa.

Builders of Textile Machinery

WINDERS ESPECIALLY

The Hunter

NO. 10
FULLING
MILL

DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

SOAPING
MACHINES

BELT DRIVE

ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

SPECIAL MILL SUPPLIES
THAT HELP INCREASE PRODUCTION

New Hand Threading Shuttle

This new patented shuttle is the simplest, most effective, and quickly threaded shuttle made. It can be operated with the finest silk or the coarsest filling — will neither *unthread* nor "balloon"—it is arranged so that lint may easily be removed, and also that felt may be inserted for tension purposes. It complies with the Massachusetts sanitary shuttle law.

Never-Slip Cop Spindles and Tubes

We can guarantee that with this combination you can run your looms faster and with longer cops than with any other spindles or tubes. With this arrangement there is no waste of filling.

Paper Cop Tubes, Cones and Shells

We make a complete line of these, all of the very finest quality — samples sent free on request.

Shuttles and Shuttle Irons

MADE FOR ALL TEXTILE PURPOSES

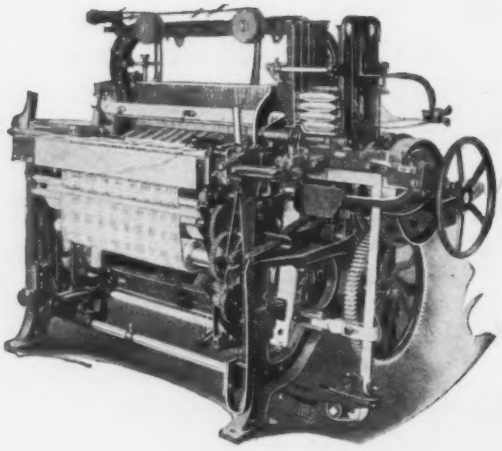
When in need of any of these products, all of which are fully patented and protected, give us a trial order — we can guarantee you complete satisfaction.

American Textile Specialty Machinery Co.

670 Eddy Street, - Providence, R. I.

Also 13th St. and Boulevard, Long Island City

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

ECONOMY AND SAFETY

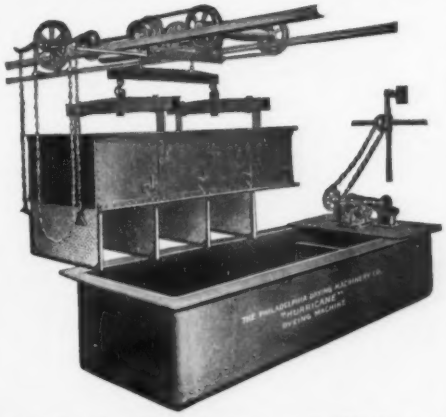
YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

The best and mosteconomical Dyeing Machines



BETTER DYEING
at
LESS EXPENSE

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types

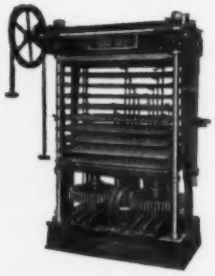
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

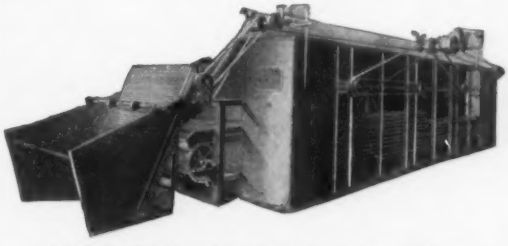
STEEL CONSTRUCTION INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

Motor and Belt Driven



AUTOMATIC STOCK DRYER
(With Sectional-Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**

WATSON, LAIDLAW & CO. LD.

DUNDAS ST. SOUTH, GLASGOW

PATENT WATER-DRIVEN

HYDRO-EXTRACTOR

Underdriven Baskets

24 in. Diameter to 48 in.

Suspended Baskets

30 in. Diameter to 84 in.

Retain the benefit of self-balancing with entire absence of belts and gearing. No working parts requiring lubrication except spindle, which only requires a little grease once or twice a year. Can be placed anywhere regardless of power or moisture.

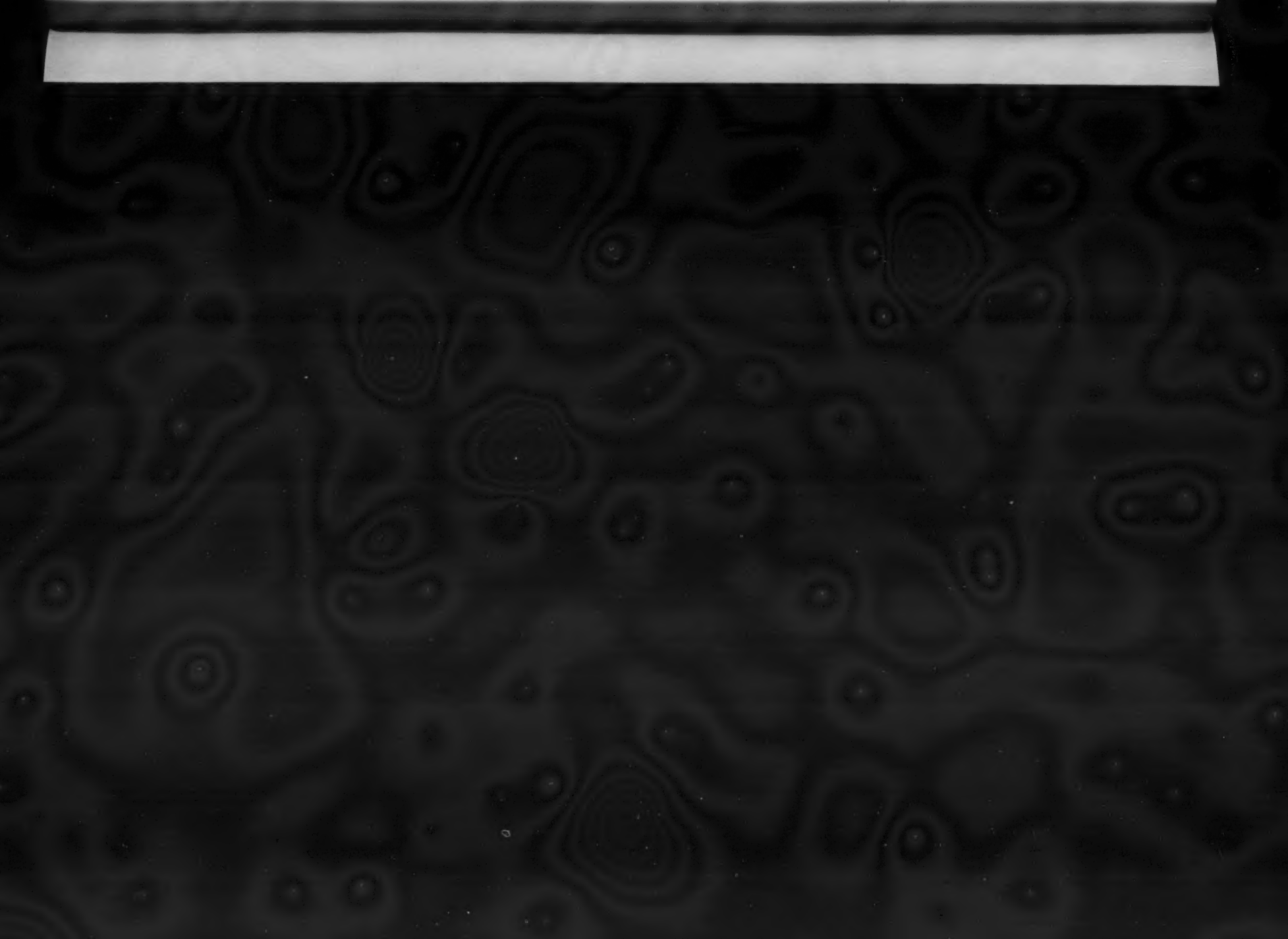
ABSOLUTELY SAFE

CALL OR ADDRESS

W. J. WAYTE INCORPORATED

ONE LIBERTY STREET, NEW YORK

Pacific Coast Agents, - - BOURRET & KIRKWOOD, Seattle, Wash.



"IDEAL" AUTOMATIC LOOMS

SILK LOOMS

DOBBIES, BOX MOTIONS

TEMPLES

FANCY WEAVING MOTIONS

THE STAFFORD COMPANY

READVILLE, MASS.

FRED H. WHITE Southern Agent CHARLOTTE, N. C.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch

¶ What do you get back for the money you put in your harness?

¶ Have you ever figured out that you ought to get a "worth while" return for the money you spend? That you ought to get something more than a temporary service?

¶ Now is it logical—is it right to go on spending real money for wire and cotton harness when experience tells you that you must go on spending as long as you use that kind of harness?

¶ The very nature and construction of wire and cotton harness are against their ever being either economical or efficient. Neither one is strong enough to stand long wear; both demand constant renewing and neither will permit your looms to work up to full capacity.

¶ Both stand in the way of a constantly uniform output, both require the unceasing attention of the operator, both are "blots on your expense account." **STOP IT!**

¶ Put your money into harness that will last years instead of months; that will enable the operator to give ALL his attention to his *real* work. Put your money into harness that you *don't* have to renew—that you don't have to carry on your books as a fixed running expense.

¶ **The Flat Steel Heddle—because it is steel—will easily outlast from five to ten sets of any other type of harness. We have customers who are still using the same set of harness they bought ten years ago.**

¶ We are showing you now how you can get something permanent—something real—something "worth while" for the money you put in your harness.

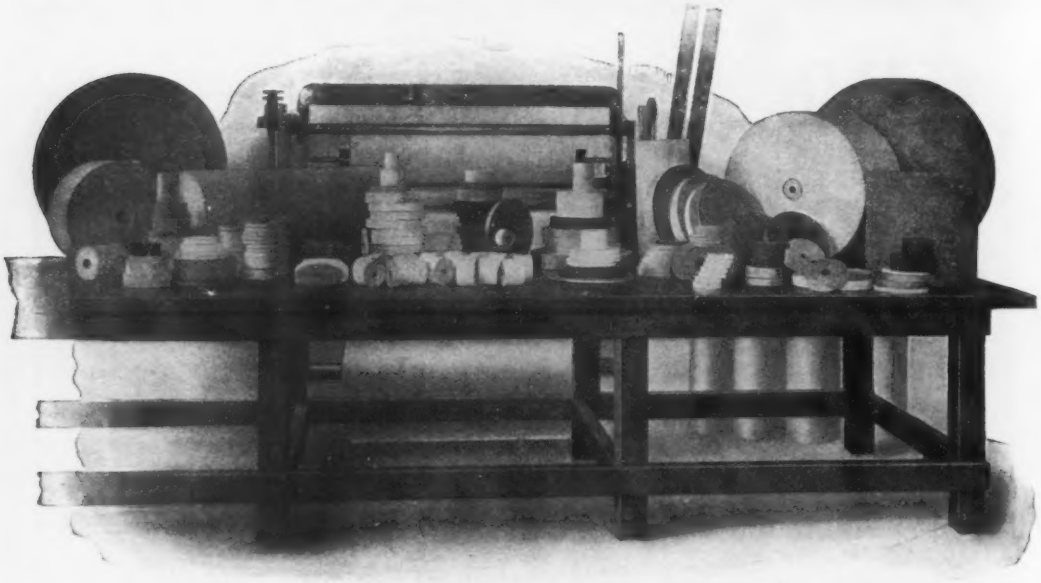
The Steel Heddle Manufacturing Co.

2110-2118 Allegheny Ave. Philadelphia, Penna.

New England Office:
76 Dorrance St., Providence, R. I.

Great Britain and Ireland Office:
4 Thornton Road, Bradford, England

Japan and China Office: Shewan, Tomes & Co., Kobe, Japan



Specimens of Rolls, large and small, produced by

Cameron Slitting and Rewinding Machine

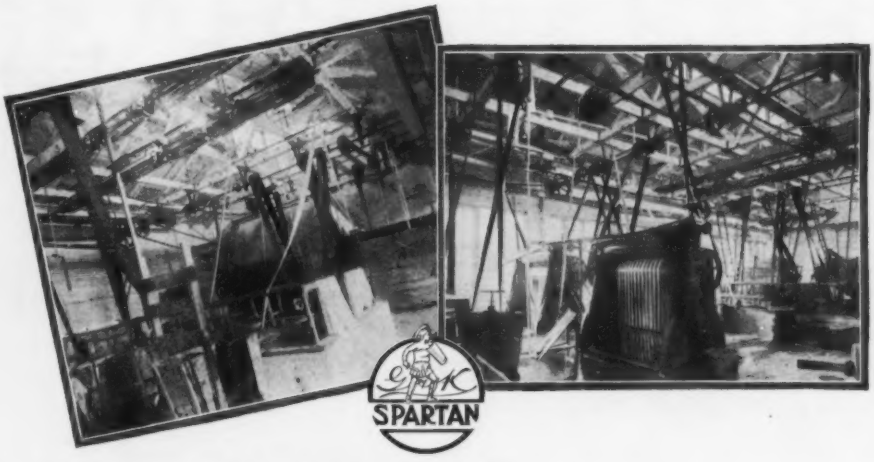
(UNIVERSAL TYPE)

Correspondence is invited relative to all problems involving a *rolling up process* or any operation where fabric or other material is split into narrower widths and rolled up into coils.

Perfect Rolls are *impossible* by *old style Rolling Up Machines.* Let us make some suggestions.

Cameron Machine Company

57-61 Poplar St., Brooklyn, New York



"We Find They Stand Steam, Acid and Water Just as Represented"

"In regard to pliability and friction, would state that they are the best we have ever used and have not called for any belt dressing of any description."

"These are the first belts we have ever used that we did not have to take up or cut."

Thus writes the Superintendent of a big bleachery in Georgia twenty-eight months after installing a complete equipment ($3,000) of Spartan Steamproof Leather Belting.

Still further evidence of the satisfactory service rendered by Spartan Belting lies in the fact that we have recently furnished this Superintendent another big Spartan Equipment for a large new mill.

There you have it—conclusive proof—stronger than mere words can express—of the economy, efficiency and complete satisfaction to be had from Spartan Leather Belting.

The use of Spartan Belting in your mill is a guarantee to you of the same degree of satisfactory service. Just install a Spartan in your Bleachery, Dyehouse, Mercerizing Room—in fact, in any place where conditions are unusual—exposure to steam, water, chemical fumes, excessive heat, high speed with small pulleys, etc.

Remember, we guarantee Spartan Belting to withstand exposure to water, steam, oil, chemical fumes; also that owing to its unusual pliability it will grip the pulley perfectly, run with less tension and reduce the friction load.

Be sure to look for the Spartan Trade-Mark; it is your protection and guarantee of absolute satisfaction.

Interesting Spartan book sent upon request; also our "Belting Manual," a 96 page book of useful mechanical rules and belting information of interest to all belt users. May we send you these books?

The Graton & Knight Mfg. Co.

OAK LEATHER TANNERS AND BELT MAKERS

Worcester, - Mass., U.S.A.

BRANCHES			BRANCHES	
Atlanta	Detroit	Montreal, P. Q.	Minneapolis	Portland, Ore.
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Selling Agents for Texas - THE GRATON & KNIGHT MFG. CO., of Texas, Dallas, Texas

Lane Canvas Mill Baskets Boxes or Trucks

Found in the Largest and Most Modern Mills

BECAUSE

Durability
Smoothness
Lightness
Economy

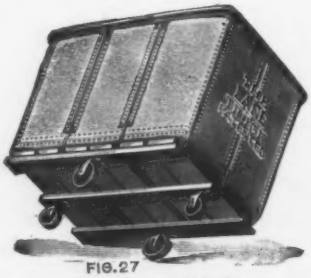


FIG. 27

Lane Canvas Truck.
Made as shown, or with canvas partition. Mounted on improved **Thread Guard** Wheels, as above, or on swivel casters. Leather bound rim. Heavy duck.

FIG 49

Lane Basket Frame of Tough Spring Steel.
Renewable Hard Maple Shoes.
Also furnished with steel shoes, where dragging is not severe.
Number and diameter of frames varies with size of baskets.

COUNT

A Style for Every Use

W. T. Lane & Brother

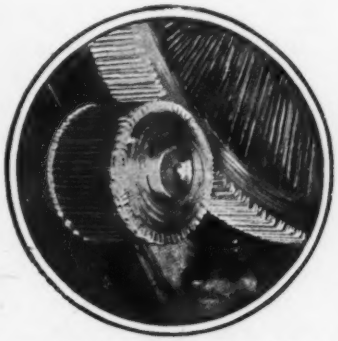
Manufacturers

Poughkeepsie **New York**

GEARS VERSUS EARS

A Noisy Metal Pinion

makes you feel as though you're all ears. Noises obliterate sounds that are necessary for best accomplishment of work.



A Quiet New Process Pinion

The ear becomes a normal useful organ. You can then make full use of your other four senses.

Ask for book – Noiseless Gear Driving

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

NEW PROCESS GEAR CORPORATION

SYRACUSE, N.Y.

75

Canadian Agents: Robert Gardner & Son, Ltd., Montreal

GET THE
ALTEMUS WINDER

The design and various attachments have been PATENTED and other PATENTS are pending to protect and cover many features of great value in this machine

FOR WINDING

Silk, Artificial Silk, Fine Mercerized and Cotton Yarns

FROM THE SKEIN TO THE CONE

No matter how skeptical you may be about the importance and economy of these new features, we ask you to investigate.

We know we can prove to you that our method will revolutionize the use of cones and give satisfactory results. Send a sample of yarn for us to wind to the cone and we will show what can be done for you.

You may ask who has them in use. There are important reasons why we cannot answer ***just now.*** However, we will soon tell you where they are and will prove that most gratifying results are being obtained by present users of yarns wound the Altemus way.

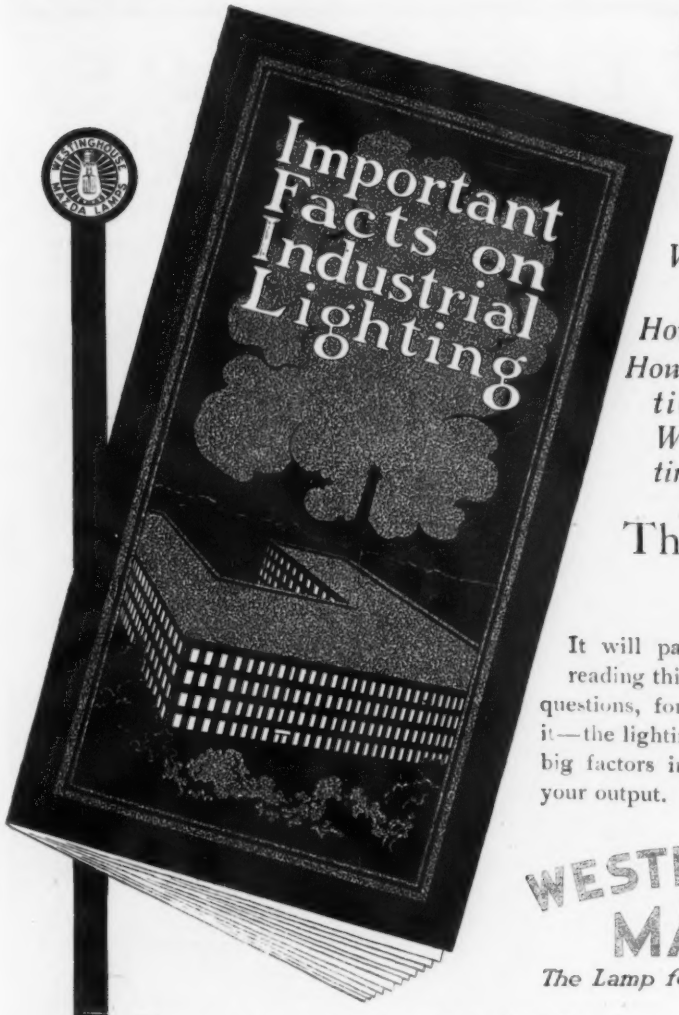
Just give this cone your careful consideration now and we will do our part to give you the results and economy you desire.

Write to

JACOB K. ALTEMUS

2824 North Fourth Street, - Philadelphia, Pa.

Textile Machinery for Winding, Spooling, Warping and Beaming



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Why Most Textile Mill Lighting is Bad.
How to Properly Use Light.
How Your Present Installation Can Be Improved Without Changing It Entirely.

This Free Booklet Tells How

It will pay you to spend five minutes reading this booklet and considering these questions, for—though you may not realize it—the lighting in your mill is one of the big factors in the quantity and quality of your output.

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There is information in this booklet that you can make use of the day you read it

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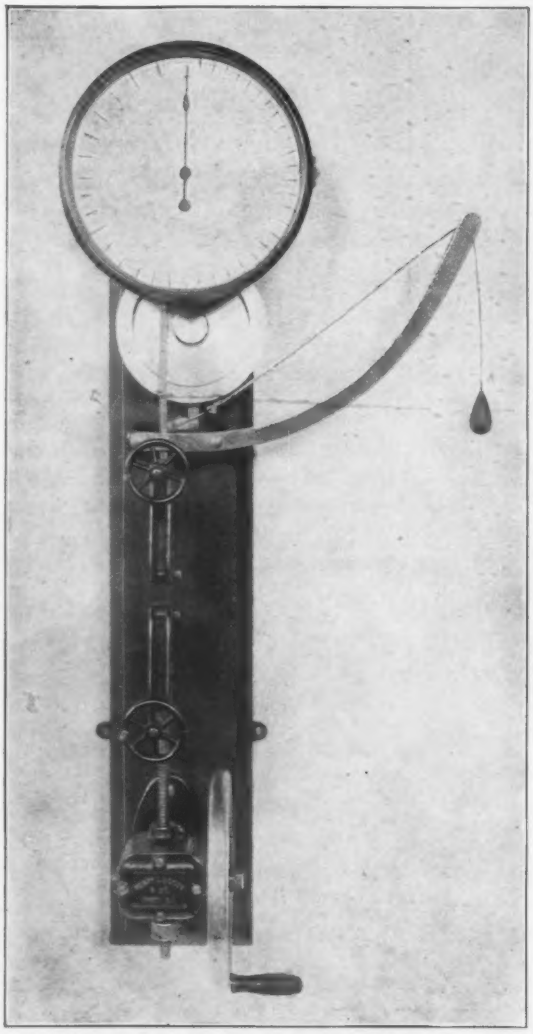
ADAPTABLE TO ALL STANDARDS. FOR YARNS, THREADS, TWINE, BRAIDS, NARROW FABRICS, CLOTH OF ALL DESCRIPTIONS, TIRE FABRICS, RUBBER, etc.



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Price $65 and upwards

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Over 35 Hand Operated Cloth Testers sold in past 30 days

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Immediate Delivery

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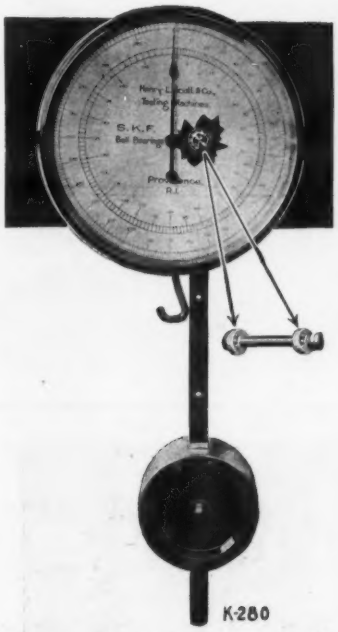
Demand Yarns of Precise Tensile Strength



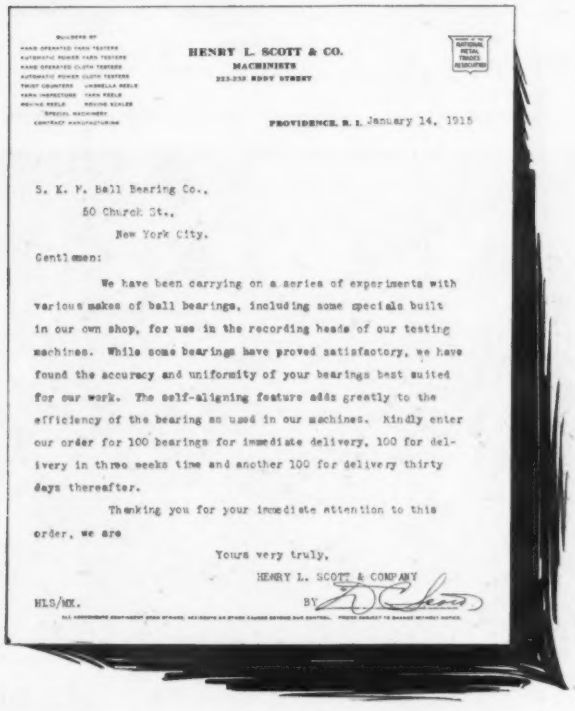
K-280

Testing Machine equipped with S K F Ball Bearings

American mills are now realizing the value of yarn testers—testers that can be relied upon.

The accuracy of testers, depends upon the accuracy of the bearings.

That is why Henry L. Scott & Co. use SKF Ball Bearings on their yarn testers.



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MACHINISTS
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PROVIDENCE, R. I. January 14, 1915

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50 Church St.,
New York City.

Gentlemen:

We have been carrying on a series of experiments with various makes of ball bearings, including some specials built in our own shop, for use in the recording heads of our testing machines. While some bearings have proved satisfactory, we have found the accuracy and uniformity of your bearings best suited for our work. The self-aligning feature adds greatly to the efficiency of the bearing as used in our machines. Kindly enter our order for 100 bearings for immediate delivery, 100 for delivery in three weeks time and another 100 for delivery thirty days thereafter.

Thanking you for your immediate attention to this order, we are

Yours very truly,
HENRY L. SCOTT & COMPANY
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"BUILDERS OF THE BEST"

Labor Saving Machinery for Dyeing, Singeing and Finishing

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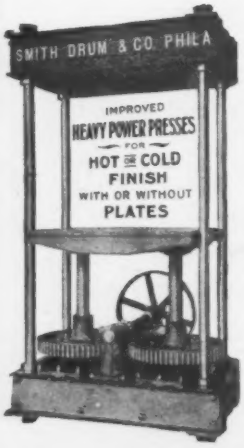
IN SULPHUR, ANILINE, DEVELOPED BLACKS AND COLORS
POWER SCREW PRESSES and MERCERIZING MACHINES

SAVE LABOR and DYE STUFF and do BETTER WORK
in your dye house by using



Smith, Drum & Co. Machines

Full particulars on application

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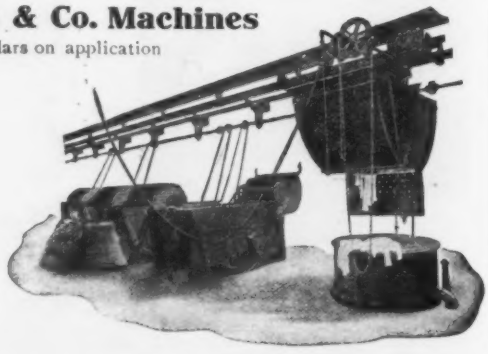
Cumberland Streets,
Philadelphia,
Pa.



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This equipment is using exhaust steam at atmospheric pressure. Compare with conditions in your boarding room

Saves Labor, Power, Steam and Seconds

FORMS ARE MADE TO SUIT YOUR STYLES

You Can Secure This Equipment Without Capital Outlay

For particulars write

THE PARAMOUNT METAL FORM DRYING COMPANY, - BEAVER DAM, WIS.

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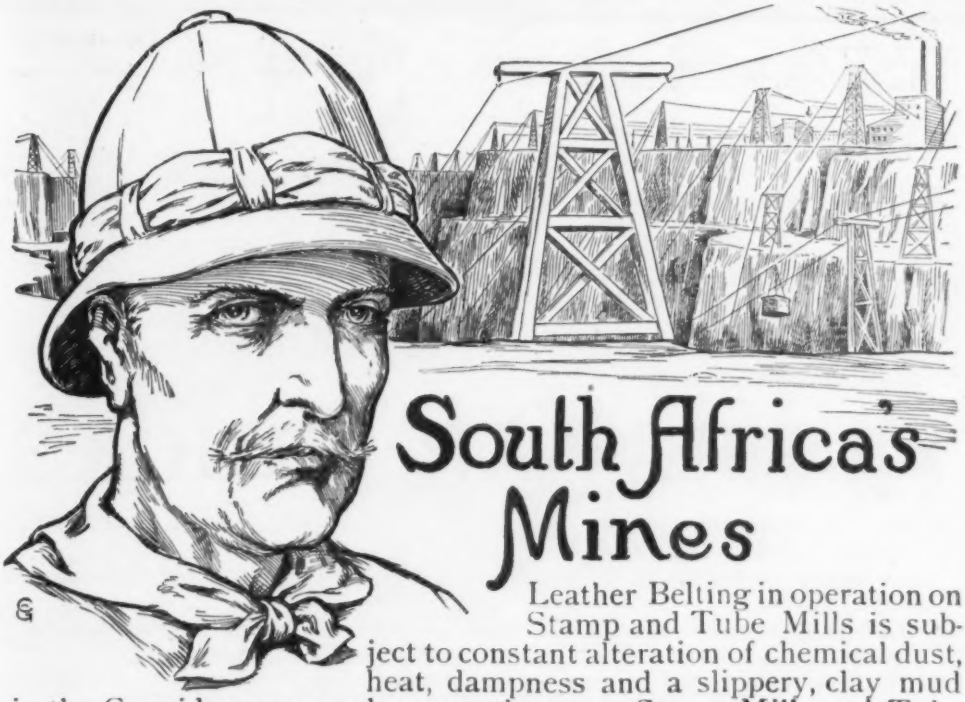

South Africa's Mines

Leather Belting in operation on Stamp and Tube Mills is subject to constant alteration of chemical dust, heat, dampness and a slippery, clay mud in the Cyanide rooms and among the many Stamp Mills and Tube Mill Houses along the sixty mile of "reef" where the gold comes from. It is enough to tear the life out of a leather belt in very short order, and did so until our travelers introduced DUXBAK belting and the live, progressive miners took to it at once, and as it had the quality it was found much cheaper in the long run.

As the Battery managers are charged up for all running expenses, they are very keen to have such expenses as low as possible.

Since the introduction of this belting along the "Reef," we have sold thousands of feet, some of it in operation under ground over a mile below the surface. DUXBAK is made for hard work and lots of it. It has the stuff in it to make it wear long, and we treat it in a way to make it work perfectly in any condition of heat or moisture, and on every kind of machine, whether wet or dry.

Write us now for any further information that you would like to have.

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TRADE MARK

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ESTABLISHED 1868

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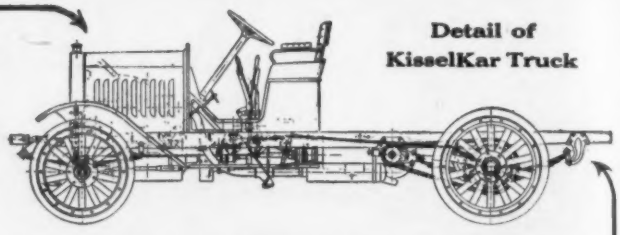
DUXBAK

The Belt of Universal Use

Let KisselKar Truck Owners Tell You Their Story



Detail of KisselKar Truck

IF you are going to buy a truck find out what KisselKar Trucks have done for men in *your line of business.* The Kissel Motor Car Company will be glad to give you the names. See them or, if at a distance, write them. They will tell you just how sturdy and dependable KisselKar Trucks are and what you can expect them to accomplish.

KISSELKAR TRUCKS

KisselKar Trucks are used in over two hundred lines of business. *In many cases they have paid for themselves the first year.*

There are six sizes of KisselKar Trucks—1500 lbs, 1, 1½, 2½, 3½ and 6 tons carrying capacity. Special bodies can be built for any requirement.

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New York, Chicago, Boston, Philadelphia, St. Louis, Milwaukee, St. Paul, Omaha, Minneapolis, Baltimore, Pittsburgh, Cleveland, Detroit, San Francisco, Los Angeles, Seattle, Buffalo, Rochester and 300 other principal points.

FAIRBAIRN LAWSON COMBE BARBOUR LTD.

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MAKERS OF MACHINERY FOR PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE,

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MACHINERY for the MANUFACTURE of TWINES and ROPE YARNS.

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The Patent Centrifugal Flyer Cop Dry Spinning Frame

For Spinning Cops on the Bare Spindle.

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Let It Lift Your Trucking Troubles

Avoidance of rehandling damage, elimination of confusion among operators and relieving the congested condition of aisles are a few of the accomplishments attributed to

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The expensive cost of trucking in the average textile mill is largely due to the necessity for constant handling. The platform system of trucking eliminates the major portion of this charge, thereby reducing the cost of this operation from 50% to 90%.

National Chapman Elevating Trucks are built in ten standard models. Special models constructed when required.

If one of your business burdens have been "*Trucking Troubles*" a careful analysis of catalog "W" will prove a money saver.

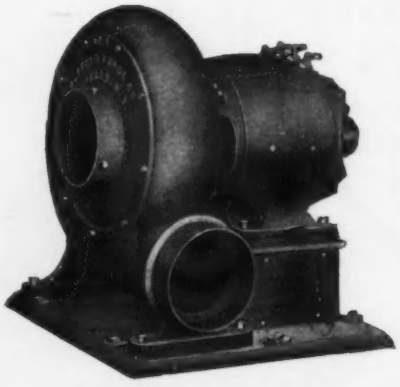
National Scale Co.

18 Record Street
Chicopee Falls, Mass.

Say "Send for Catalog 'W,' National Scale Co.," to your stenographer TODAY

"Buffalo" Exhausters

Efficient—Durable—Serviceable



"B" Volume Exhausters are especially adapted for removing smoke and fumes in small ventilating installations and for conveying dust and refuse in exhaust systems.

Cast iron solid peripheral shell absolutely prevents leakage at the points of highest pressure and removable side-plates give easy access to interior allowing blast wheel to be taken out without trouble.

Furnished for pulley or motor drive. Standard sizes in stock. Catalog 178-L-74 on request.

BUFFALO FORGE CO.
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Manufacturers of Air Washers, Spray Nozzles, Forges, Blowers, Drills, Heating, Ventilating and Drying Apparatus

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ALBERT BIRCH TEXTILE MECHANICIAN

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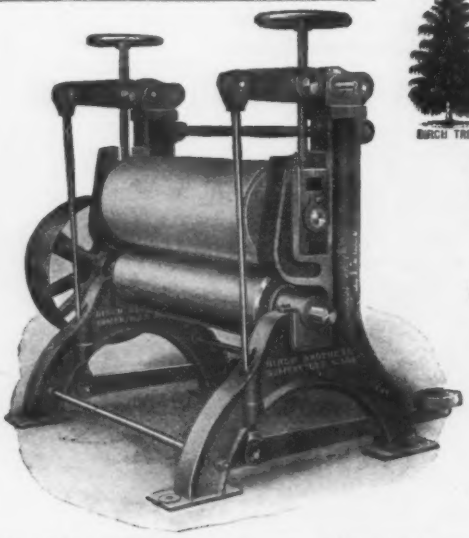

Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

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Piece-End

Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

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Also Makers of

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Scutchers, Openers, Folders, Crabbing and Soaping Machinery

If Your Pumps Are

GOULDS

The Quality Is There

GOULDS PUMPS

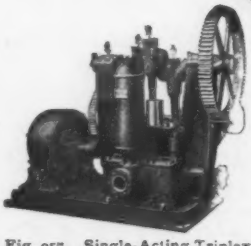

Fig. 957. Single-Acting Triplex Plunger Pump

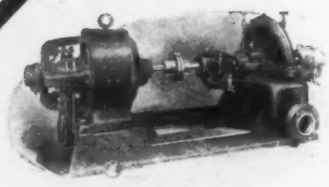

Fig. 3001. Double Suction Centrifugal Pump

Bulletins on Pumps for Textile Mills, Bleacheries and Dye Houses, sent on request

THE GOULDS MANUFACTURING COMPANY

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The Supreme Motor for Textile Mills

Westinghouse Electric Type CS

THIS new motor, now on the market after drastic factory and service tests lasting over three years, represents the most advanced design for textile service. Some of its special features are:

Forged steel construction, insuring great strength with minimum weight.

Efficiency higher than that of any other line of motors on the market.

Very large air gaps.

Bearings especially designed for textile service.

Rotor practically indestructible.

Primary coils form wound and laid in open slots in sizes above 5 h. p.

Readily adapted to special textile applications.

Made in all commercial sizes and speeds for all commercial polyphase circuits.

Westinghouse Electric and Mfg. Co.

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Are manufactured at our own works from the finest materials, with careful laboratory tests. They are compounded to meet the most difficult requirements.

BRETON OIL FOR WOOL

Sold subject to trial and approval

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Are made in different grades to meet all Textile uses. Each barrel is for a particular use, and bears a brand, and every barrel of that brand will give the same results.

BORNE, SCRYMSER COMPANY, 80 South St., New York
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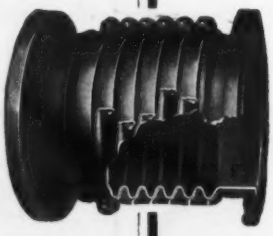
The New Badger Expansion Joint Saves Time and Trouble



Here's an expansion joint for steam, gas, or water pipe lines which is low in first cost, is absolutely reliable, never requires packing, and lasts a life time. It is made of corrugated copper with equalizing rings to insure each corrugation taking its share of the expansion. Made in all sizes and for any pressure.

Send now for our new catalog showing construction and giving description and result of exhaustive tests.

The E. B. Badger & Sons Company
73 Pitts Street, Boston, Mass. 50 48

RELIANCE CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; **drying** oilcloth, or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster **department** for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works

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Heat Radiation Reduces Your Plant's Efficiency

There cannot be maximum efficiency—maximum profit—in any plant where there is waste.

Look to your pipe insulation!

Every unit of heat lost by radiation from your steam lines represents energy wasted—a loss of money in coal consumed without giving its equivalent in power. You can save 43 per cent. of the loss by radiation through imperfect pipe coverings by using

J-M Asbesto-Sponge Felted Pipe Covering

This covering is made of many layers of thin felt composed of Asbestos fibre and particles of finely-ground sponge. Countless "dead-air" cells are confined within these layers, making it the most perfect non-conductor of heat known. This material will not deteriorate under high temperatures, and will last indefinitely. It can be removed and replaced a number of times without impairing its efficiency.

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Manufacturers of Asbestos Roofings; Packings; Mastic Flooring; Conduit; Stack Lining; Fireproof Paint; Fire Extinguishers: Fuses; Etc.

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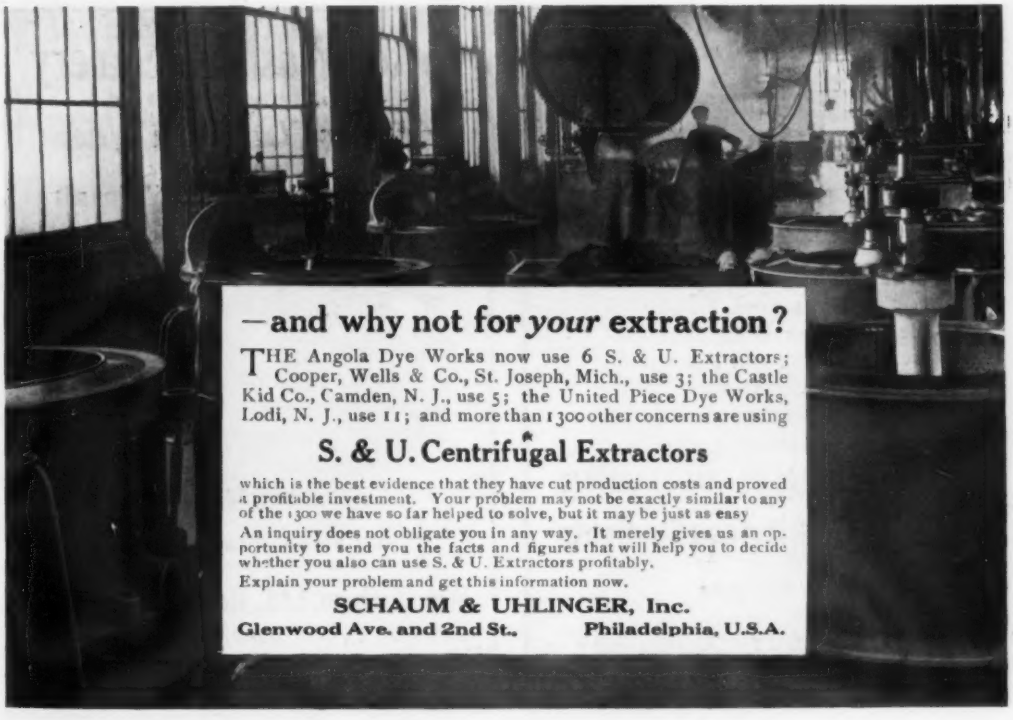
THE CANADIAN H. W. JOHNS-MANVILLE CO., Limited, Toronto Montreal Winnipeg Vancouver



—and why not for *your* extraction?

THE Angola Dye Works now use 6 S. & U. Extractors; Cooper, Wells & Co., St. Joseph, Mich., use 3; the Castle Kid Co., Camden, N. J., use 5; the United Piece Dye Works, Lodi, N. J., use 11; and more than 1300 other concerns are using

S. & U. Centrifugal Extractors

which is the best evidence that they have cut production costs and proved a profitable investment. Your problem may not be exactly similar to any of the 1300 we have so far helped to solve, but it may be just as easy

An inquiry does not obligate you in any way. It merely gives us an opportunity to send you the facts and figures that will help you to decide whether you also can use S. & U. Extractors profitably.

Explain your problem and get this information now.

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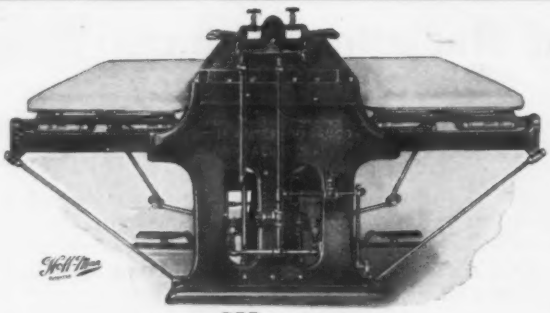

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"Operators quickly develop a high degree of efficiency in neatly placing garments on the Hoffman and a wonderful speed is soon acquired. Under the pressure of the press every fibre of the fabric seems to have been set in its proper place and every garment is brought up to the most sightly condition imaginable."

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Improves the appearance of knit goods and increases the efficiency of labor

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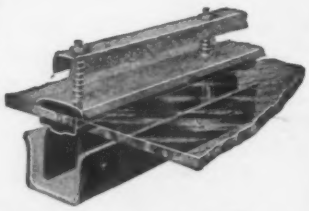

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Puttyless Skylights
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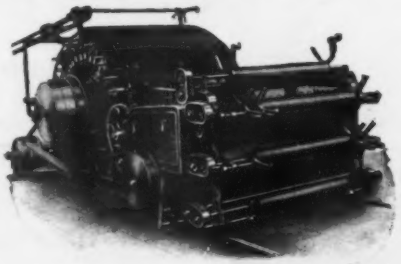
Bridgeport Connecticut

Cotton Waste Machinery

Complete equipment on
English and Continental Systems
TO
Prepare, Card and Spin all kinds of Cotton Waste



Single Finishing Carding Engine with Leather Tape Condenser, for Cotton Waste

Wm. Tatham, Ltd., Rochdale, England

Agent:
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Don't Limit the Output

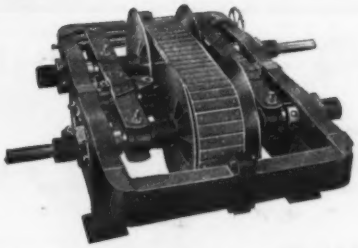
of any machine by running it at one speed all the time simply because you have other machines driven from the same shaft.

Regulate Each Machine

Run it as fast or as slow as you require. Make each machine independent of the other. Let the operator control the speed. Do it with

"The Reeves" **Variable Speed Transmission**

and thus increase your output and your income.



Secure the proper speed for any kind of goods quickly—change as often as you wish or maintain any one speed as long as necessary.

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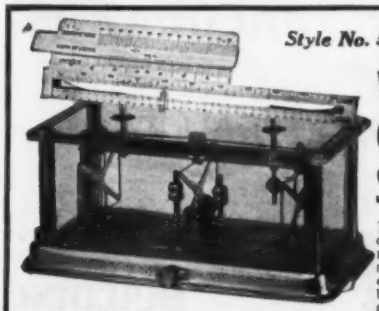

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No tables or calculations required. Results read off direct from beams. Torsion Construction eliminates friction and wear. Having no knife edges to become clogged with dust and fibres, they are especially adapted for use in textile mills.

Dye Scales Special Scales for Special Purposes

Torsion Balances used by National, State and Municipal Governments, United States Appraisers Stores, Manufacturers and the trade. *Write for Textile Pamphlet.*

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You Can Use Less Power

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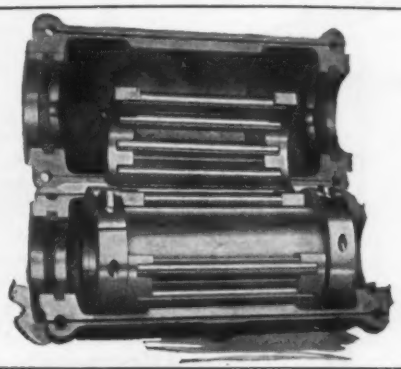

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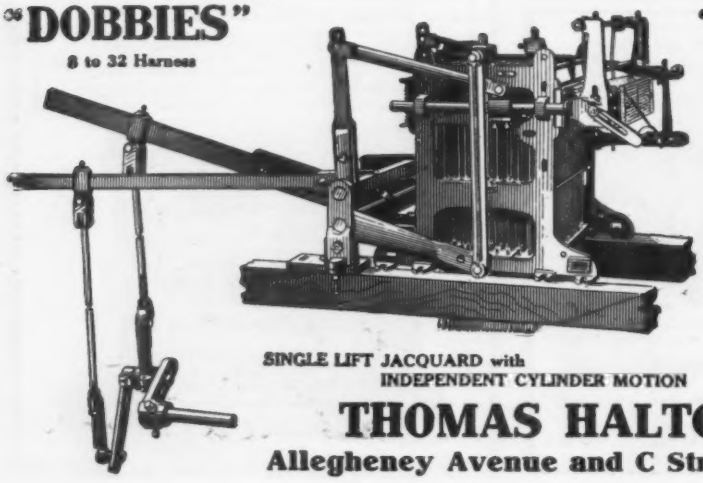

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208 to 2608 Hooks

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Has Been Adopted by the Representative Manufacturers of this Country.
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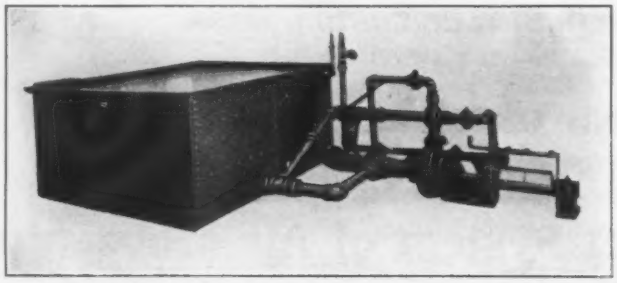
Made in all sizes up to 500 lbs.



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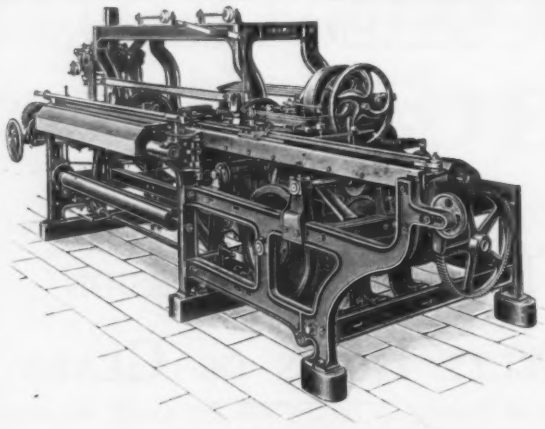
Owned and operated by the management of Hussong Dyeing Mch. Co.

With the demand for sheer hosiery, there followed a demand for a machine that would dye it without injury. The advantages of the Uniform Machine do not end here. One man will attend 3 machines, with a capacity of 3,000 lbs. or more daily.

By circulating the liquor through the stock, without pressure, after singeing is avoided, and a further considerable economy results from the concentrated bath.

By a simple means, different grades and lots remain separated throughout

We will dye samples for and show the machines in operation to all interested.



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Carpet Looms

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and every day it is more and more extensively used "in the U. S. A." for producing

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Water as Soft as Rainwater for all Textile Purposes

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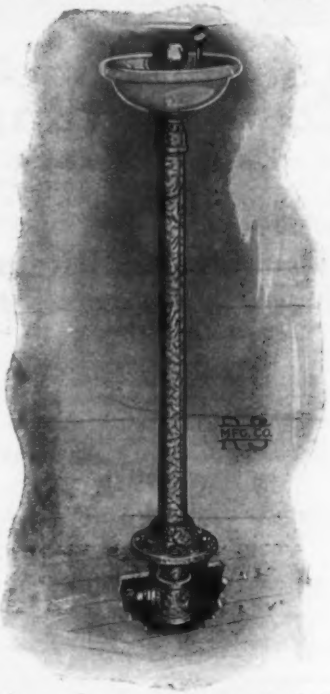

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If You are Interested in

Machines for Dyeing or Bleaching Yarns

Cotton
Wool
Worsted
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Write us to send you an estimate of cost of installing an equipment as well as the economies in labor and steam that can be made.

John H. Giles Dyeing Machine Co.

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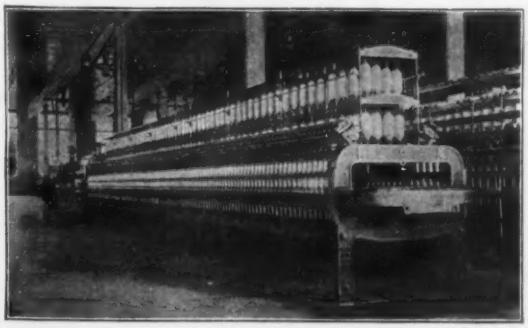
THE BROWN SPIN-WRIGHT



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As Operated Successfully in a Large Mill

For Particulars Address

The Brown Spin-Wright Cotton Co.

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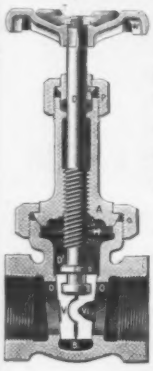
(Especially The White Star Valve)

FIVE POINTS OF EFFICIENCY COMBINED IN THE POWELL WHITE STAR GATE VALVE



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Because we know you will be satisfied with its use we can afford to give you a generous sample stick of Stephenson's Bar Belt Dressing to use in your mill and let it prove its superiority. And then

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Because they—

reduce your fuel bills,
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allow the use of loose belts and so reduce friction.

If you want the half-pound bar just tell us to whom we should send it and you'll get it without cost or obligation

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Mail Guide Block for Free Sample

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Loose Steam in the Dye House
Means Less Profit in Your Pocket

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will remove the steam, cause a circulation of pure air that will revitalize your help and facilitate an increase in your profits.

For Drying and Ventilating Facts, Write To

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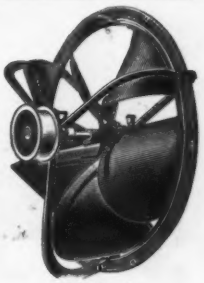
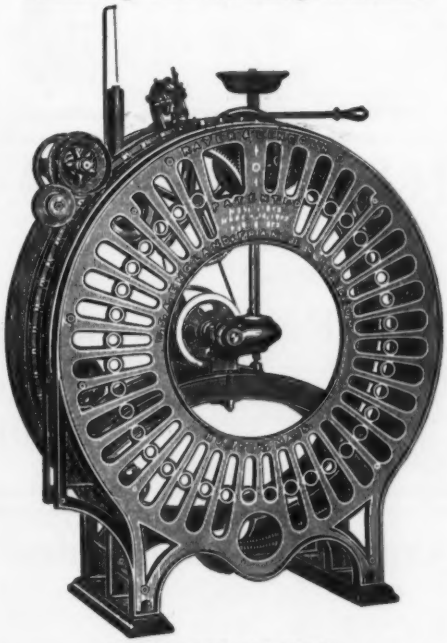


This is the
BERRY WHEEL OR FAN
WITH NO BACK DRAUGHT
the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

THE RAYER & LINCOLN
Rotary Sewing
Trimming and Marking Machine



HOW IT SAVES.

It makes a fine seam at the rate of 2000 stitches a minute.

It trims the margin of the cloth outside the seam evenly and nicely, so that the whole piece can be sheared from one end to the other. The margin never curls up.

It leaves no marks on "backs" or "back grays."

It marks the cloth automatically.

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Dinsmore Manufacturing Co.
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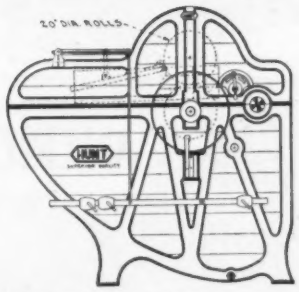
LATEST MODEL

TYPE M Double Braced Fulling Mill



The Mill with the **7 Exclusive** Features

Side Frames with M-Cross Braces giving greater strength and providing for much more secure fastening of side frames. Outside Compound Weight Arms controlling pressure of Packing Box Covers. Instantly adjustable from lightest to heaviest loads. Heavy Keyed Packing Box Levers outside of mill and connecting downward directly onto Covers with greatest leverage. Most effective Packing Box Construction with brass "wear strips." Adjustable bottom boards. Extra heavy design. Trouble Proof Bearings preventing oil stains. Self-aligning, assuring free running at all times. Stop Motion Frame counterbalanced, allowing instant adjustment to operate by lightest tangle or heaviest knot, as required. Fitted with positively reliable Friction Clutch Pulley of such simple design and construction that the most skeptical operators prefer after once using.

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to specify Steam Traps is to ***know*** the size of orifice in the trap valve. This is what governs the capacity, because no more condensation can pass through the trap than can pass through the valve.

We publish this information in a readily accessible and understood form in our Trap DATA booklet. It is of vital interest to every Steam Trap user. ***Write for DATA T-40 Today***

American Steam Gauge & Valve Mfg. Co.

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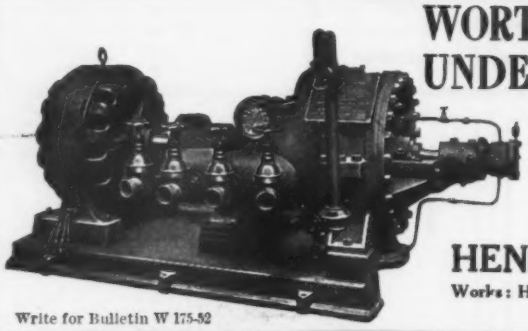

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Are built to meet the specifications of the Associated Factory Mutual Fire Insurance Companies and are the Accepted Standard of the Fire Underwriters. The Horizontal Split Casing affords ready access to the internal parts.

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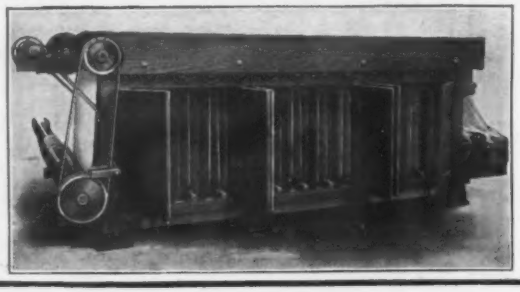
Strongest and Smoothest Can on the Market. In Use for 25 Years

Manufacturers Cooling AND Conditioning Machine



No finishing room should be without this machine. Indispensable for cooling cloth so as to permit of immediate inspection.

Finished cloth restored quickly to its **Natural Condition**

Manufacturers Machine Co.

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On the other hand, the scarcity of hides compels the manufacturers of leather belting to put up their price.
Take advantage of existing conditions. Buy Gandy and save money.
The initial cost of Gandy is only about one-third that of leather belting and less than that of rubber belting while it does its work equally as well.
The saving is obvious. Let us help you reduce your belting costs.

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Wright's Chain Link Fence

You will secure strength and staying qualities and your property will not have a "shut-in" appearance. Chain Link fence is made in various styles and heights and is appropriate

For Industrial Plants, Playgrounds, Parks, Cemeteries, Large Landed Estates and Public Enclosures.

We also make Excelsior Rust Proof and Excelsior Iron Fences in a great variety of styles. Erect the fence that suits your taste.

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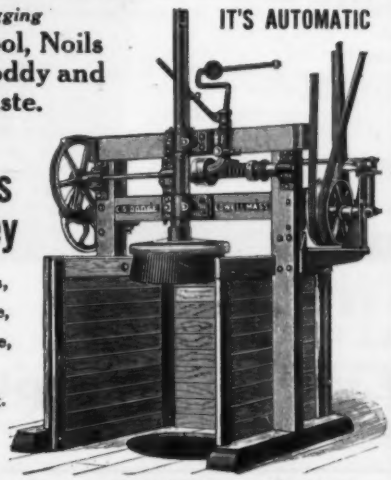
THE ORIGINAL TIME TRIED BAGGER

For Bagging
Wool, Noils Shoddy and Waste.

IT'S AUTOMATIC

It Saves Money

On Bags, Storage, Cartage, and Freight.



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Pickers, Picker Pins. Cylinder Covering a Specialty.

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This picture shows how easily one man can hoist a 500-lb. bale of cotton. How do you pile?

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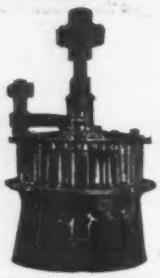

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The Leffel Wheel, now developed into the Improved Samson Turbine, will continue to maintain, as it has for the past 49 years, its superiority because of features that give it wonderful power and high velocity, economy in the use of water, and an unusual steadiness of motion under variable gateage.

These are points of merit established by scientific and experimental tests.

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THE DOUBLE, BURNISHED OR DIAMOND FINISHED

RIBBED RING WHITINSVILLE

MADE BY THE WHITINSVILLE SPINNING RING CO. MASS.

THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

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for WOOLENS, WORSTEDS, FELTS, Etc.
Built Upright or Horizontal with Low Down Feed
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MANUFACTURERS OF

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TEXTILE FINISHING MACHINERY

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FRANK L. NAGLE, President. **HENRY G. LORD, Treasurer.**

SAMUEL S. DALE, Editor

Publication and Editorial Office

144 Congress Street, Boston

119 South Fourth Street, Philadelphia. **120 Liberty Street, New York.**

537 South Dearborn Street, Chicago.

Entered at the Boston Post Office as Second Class Mail Matter

Subscription Rates.

Textile World Record, in the United States and Mexico	$2.00 per year
To Canada, on account of extra Postage	2.50 per year
To other **Foreign Countries** (postage paid)	3.00 per year
Textile World Record and the **Official American Textile Directory** (Traveler's Edition)	3.00 per year
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American Directory of the Knitting Trade

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It contains **full reports of every knitting mill** in the United States and Canada, giving capitalization, names of the officers, including superintendent and buyer; kind of goods made; number of knitting machines, whether latch or spring needle; number of sewing machines; whether the mill dyes or bleaches or finishes; kind of power; number employed; selling agent; kind of yarn bought; lists of the jobbers, manufacturers' selling agents, commission merchants, department stores and large retailers handling knit goods and the name of the person in charge of the knit goods department. List of dyers, bleachers, finishers, printers, etc., making a specialty of knit goods work. Special copyrighted maps of the mill districts, showing the cities and towns where there are knitting mills. It is indexed so any town or mill may be quickly found.

THE KNIT GOODS TRADE. The Dry Goods Section of the American Directory of the Knitting Trade is also bound separately. It is pocket size, has flexible covers, and contains classified lists of manufacturers, manufacturers' selling agents, jobbers, department stores, large Retailers, and New York Buyers. Price **$1.00.**

Permanent Colors Create Permanent Trade

The insistent demand of the consumer for Fast Colors makes it imperative that the Retailer, the Jobber, the Cutter-up and Textile Manufacturers recognize the question, Fastness of Colors, as a most important one

Indigo The introduction of synthetic Indigo by the Badische Anilin-& Soda-Fabrik in 1897 greatly lowered its cost, simplified its application and placed it on a scientific basis. The immediate practical result has been that Indigo is used on an ever increasing scale in the production of overall goods (denims) for working garments worn by artisans of all classes everywhere, as well as for navy blues with white designs, in percales, and similar fabrics which are so largely used the world over for women's house and working dresses. Nothing has yet been found which is as well suited as Indigo for these and many other purposes, since it combines minimum cost, brilliancy of color and satisfactory fastness. In fact, the word "Indigo" to the consuming public is a guarantee of a durable and satisfactory color.

Indanthrenes Unfortunately, however, Indigo produces only a Blue, while the trade requires every shade in fast and brilliant colors. To Dr. Rene Bohn, Director ot the Badische Antlin-& Soda-Fabrik, Ludwigshafen a/Rhein, should be given credit for the discovery of the series of dyestuffs derived from Anthracene, known as Indanthrene Dyes, which produce fast colors in every desired shade and tone. The introduction of these dyes in the cotton industry has created a new standard for fastness and brilliancy, in which combined respects they excel any colors heretofore known. Indanthrenes are actually permanent while the fibre lasts, meeting therefore every trade requirement, a fact so well demonstrated that today the word "Indanthrene" (pronounced In-dan-threne) is synonymous with "Fast Colors." There is probably no factor of greater importance in the manufacture of cotton goods than the fastness of the colors, in that it constitutes a most attractive selling argument, increases their popularity, and broadens the market for them.

BADISCHE COMPANY

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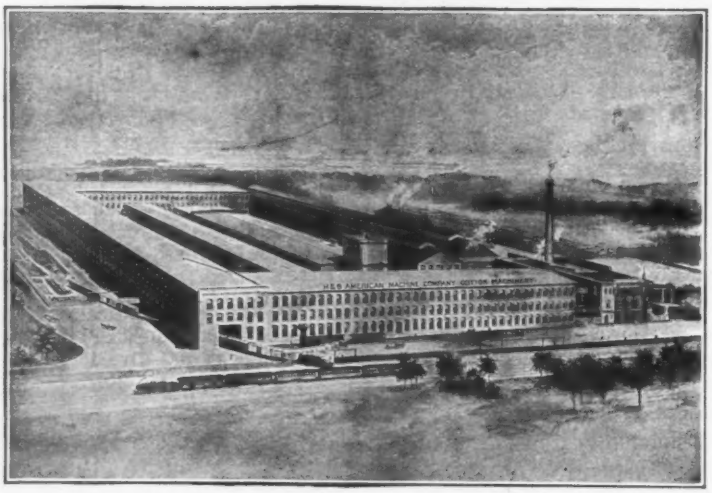
Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

MARCH, 1915

Monthly Comment.

The Myers Bill and the Senate Committee On Manufactures

It has taken nearly four months of constant prodding to make the Senate Committee on Manufactures realize that a mistake was made in allowing a favorable report on the Myers textile labeling bill to be sent to the Senate last October. As soon as this report was made public we began an investigation of the way in which it had been brought out. We learned that prominent members of the Committee had never received any notification of a meeting to consider the Myers bill. We also discovered that ,contrary to the claim made in the Pomerene report, the Department of Agriculture had never approved of the bill.

In our November issue we exposed the neglect of the question by the Committee. In January we renewed our criticism and urged that the bill be returned to the Committee for proper consideration. In reply Senator Reed wrote us, giving his version of the matter, stating that our criticism was "wholly without justification and should be corrected." His letter was published in our February issue along with the proof of all the statements we had made in former issues. Advance proofs of the February article giving Senator Reed's letter and our reply were mailed to the members of the Committee on Commerce on February 1. The effect was immediate, as will be seen by the following extract from the discussion in the Senate on February 3 between two members of the Committee on Manufactures, Senator Gallinger, of New Hampshire, and Senator Pomerene, of Ohio:

LABELING AND MISBRANDING OF GOODS

Mr. Gallinger—Mr. President, before bills are received I desire to ask a question concerning a bill that has been reported. I address my observations to the Senator from Ohio (Mr. Pomerene).

I find on the calender Senate bill 646, providing for the labeling and tagging of all fabrics and articles of clothing intended for sale which enter into interstate commerce, and providing penalties for misbranding.

This bill seems to have been reported from the Committee on Manufactures. I am a member of that committee, but I never heard of a meeting of the committee nor was I consulted as to the matter of the report. As I have received communications concerning the bill, in which complaint is made that no hearing was held on the subject and that there are certain parties who desire a hearing. I will ask the Senator from Ohio if it would not be compatible with his views to have the bill recommitted to the committee for the purpose of giving certain interested parties an opportunity to be heard?

Mr. Pomerene—That bill was referred by the Committee on Manufactures to a subcommittee, of which I was a member. The matter was taken up with the department. As a member of that committee I was not advised that any individuals desired any personal hearing on the matter. The biil seemed to have the indorsement of the department. I knew of no objection—I say that individually—on the part of any interested parties to the provisions of the bill until very recently. The matter is now being considered by the members of the committee in view of the fact that certain persons have indicated a desire to be heard. No later than this morning one of the members of the subcommittee and myself had a conference on the subject. We expect to have a further con-

ference during the day, and if the matter may be allowed to rest for the day I think there can be something determined upon which will be entirely satisfactory to those who are seeking a hearing.

Mr. Gallinger—I have no disposition to press any suggestion at all, but I thought it was rather remarkable that I had never been notified of the meetings of the committee, as I have some views on the matter which I would have desired in my usual modest way to present to the committee had I been notified of a meeting and had the privilege of attending.

Mr. Pomerene—Mr. President, as one member of the committee, I did not know the Senator from New Hampshire was interested in the subject. Had I known of the fact, he certainly would have been advised. The subcommittee was authorized to report on the bill, as I now recall.

Mr. Gallinger—Mr. President, I am gratified to know that the subject is being given further consideration, for it is a very important matter which will lead to a good deal of discussion if it comes before the Senate unless certain matters are adjusted in connection with it.

Mr. Pomerene—Mr. President, I may say that, since these objections have come to my attention, my personal feeling about the matter is that there ought to be some further hearings on the bill with a view of perfecting it.

One important step has been taken in the work of securing sound legislation regulating the labeling of merchandise. Senator Pomerene and presumably his associates on the Committee on Manufactures have been convinced that there are objections to the Myers bill and that "there ought to be some further hearings with a view to perfecting it."

Testing Textile Materials

The discussion of textile testing and the resolutions adopted at the meeting of the Philadelphia hosiery manufacturers last month showed the active interest that has been aroused in the subject. Dr. D. E. Douty delivered an address on conditioning, in which he explained the method of testing textile materials, described the work done in the conditioning houses of Europe, illustrated the importance of reliable tests of materials, gave an account of what has been accomplished in this line in the United States, and made suggestions for the establishment of a testing house at Philadelphia. He stated that over one hundred Philadelphia firms now patronize the United States Conditioning & Testing Co. at New York and estimated that a local plant to meet the requirements of Philadelphia manufacturers could be equipped at a cost of $15,000.

After the address the following resolution was adopted:

Realizing the importance to the trade of determining the commercial value of yarns. Therefore be it

Resolved, That we, the knitting manufacturers and yarn representatives of Philadelphia, approve of any movement looking toward the establishment of a conditioning house in Philadelphia that will enable the local trade to determine a standard test upon which the purchase of all yarns may be based.

The plan outlined by Dr. Douty has two features to recommend it to the textile trade of Philadelphia:

First, it brings the testing house within easy reach of the trade it is intended to serve.

Second, it contemplates a small testing establishment at the start, leaving the increase of facilities to be adjusted to meet future requirements.

The success of conditioning in Europe was made possible by the concentration of textile manufacturing within comparatively small areas. Lyons, Bradford, Manchester and Aachen are great textile manufacturing centers, where materials can be easily and quickly brought to the establishments to be sampled and tested. The scattered location of textile mills has proved a serious obstacle to the establishment of conditioning houses in the United States, and the backwardness of the American trade in this respect has been in large part due to this condition. The success of the United States Conditioning & Testing Co. at New York was made possible by the ease with which it could be reached by a large section of the textile trade. On the other hand the failure of the textile testing department of the Bureau of Standards at Washington to render to the textile industry a service commensurate with the equipment of the Bureau and the needs of the trade has been largely a result of the distance separating Washington and the mills. The Bureau of Standards has developed the business of establishing standards and testing materials on a vast scale, as will be seen from the following es-

timates of appropriations for its support for the year ending June 30, 1916:

Salaries			$321,460
Equipment			50,000
Repairs			5,000
General expense			27,000
Grounds, care of			6,000
High potential investigations			15,000
Refrigeration constants			15,000
Testing structural materials			125,000
Maintenance of testing machines			30,000
Fire resisting properties, tests			25,000
Public utility standards, tests			50,000
Railway materials			20,000
Miscellaneous materials			20,000
Radio communication, investigations			10,000
Standard materials, purchase			4,000
Textiles, paper, leather and rubber			10,000
Color standards, development			5,000
Tank covering, tests			3,000
Change in heating system			3,000
Clay products			10,000
			$754,460
Public Works			
Chemical laboratory	$200,000	50,000	
Testing machine	400,000	50,000	
Site for Testing laboratory	50,000	50,000	
Building for Testing laboratory	250,000	50,000	
Radio laboratory	50,000	50,000	$250,000
Miscellaneous			
Testing large scales		50,000	50,000
Total, Bureau of Standards			$1,054,460

Despite the fact that textile manufacturing is the leading industry of the country, textile work has been but an insignificant feature of the activities of the Bureau of Standards. The unsatisfactory service of the Bureau has been due to the fact, already stated, that so far as testing textile materials is concerned the Bureau is too far from the mills, and also to the neglect of that other and very important branch of work, which includes the determination of physical constants and the properties of textile materials in order that textile standards may be established on a sound basis. The last-named work would include, for example, the determination of the actual regain of textile materials under various conditions of temperature and humidity. And for this the isolation of the Bureau of Standards, instead of being a disadvantage, as in the case of testing, would be a decided advantage, because such work calls for the spirit of scientific research and the complete exclusion of commercial influences. Furthermore this service ought not to involve any large expense.

The lessons to be drawn from these conditions and the experience with textile testing in the United States are so plain that he who runs may read.

First: The work of testing should be done in testing houses economically organized and managed, and located where they can be easily reached by manufacturers and dealers, the cost of the service to be borne by those for whom it is performed.

Second: The testing of textile materials having been turned over to the local establishments, the textile department of the Bureau of Standards should devote itself to the determination of such physical constants and properties of materials as may be of importance in textile manufacturing. The cost of such investigations, which need not be large, may be properly borne by the Government, as they are calculated to promote the general welfare of the country.

The Dyestuff Situation

In his preliminary report to the Senate on the aniline color industry Secretary Redfield presents an interesting and valuable summary of the dyestuff situation, and makes very clear the perilous position occupied by the industries of this and other countries by reason of the dependence on Germany for the necessary supply of artificial colors. The report is a striking exhibit of the need of protection to domestic industry, and all the more impressive because it is signed by one who has proclaimed himself to be a believer in free trade on moral grounds. It states that some of the largest manufacturers (presumably American manufacturers of dyestuffs, of which there are only four) have informed the Department that a tariff change is not needed. This statement should be considered in connection with the report on the domestic dyestuff industry submitted to the New York section of the American Chemical Society last November and signed by I. F. Stone and H. A. Metz, which contained this reference to the tariff:

The best information and judgment your committee can obtain is that the above manufactured products of coal-tar, not dyes and not colors and not medicinal, should carry one-half the duty of the finished coal-tar dye and that the above rate of 30 per cent. ad valorem and 7 1/2 cents specific would probably be sufficient to encourage and enable domestic manufacturers to expand their operations to such an extent as to supply a very material increase in, if not the whole, of these commodities consumed in this country.

The information given to the Department by unnamed manufacturers is, however, of minor importance in view of the following clear cut statement in Secretary Redfield's report:

American chemical works and American manufacturers of dyestuffs are ready to embark capital and experience in building up a distinctly American coal-tar chemical industry, using entirely American crudes and intermediates, provided there is adequate legislative prohibition against both "dumping" in our markets or unfair restraint of American trade by the arbitrary action of foreign monopoly permitted by foreign law and not as yet forbidden by our own.

This passage states the essence of the protective principle, which finds its application in the form, not only of specific and ad valorem rates of duty, but of all regulations, such as tariff administrative acts and the legislation recommended by the Secretary of Commerce to prevent dumping and other methods employed by foreign producers for destroying our industries and building up their own.

The following, which is the only reference to the patent question in the report, carries the inference that patent legislation is of little or no importance in connection with the establishment of a domestic dyestuff industry:

Domestic makers assert their ability to make at once over 90 per cent. of the dyes now consumed in the United States, which are now patent free, and state that the remaining tenth will soon be freed from patent restriction.

It is safe to say that if Germany had been guided by any such narrow conception of the possibilities of chemistry when she began to create an artificial dyestuff industry half a century ago on the foundation of Perkin's discovery, the world would not now be dependent on the German Empire for its supply of colors. Instead of accepting what had been done as being all that could be accomplished, the Germans began that wonderful development of the chemistry of coal tar colors, which has given the world an innumerable number of valuable products, of which artificial alizarine and artificial indigo are examples. Nor is such a narrow conception of nature's laboratory any more justified now than it would have been fifty years ago, despite the remarkable progress during that period. It is not for man to say that he knows all that can be known of the forces of nature. Such an idea spells stagnation. No limit can be set to the progress that may follow the acquisition of knowledge. It is on this basis of unlimited possibilities that the artificial dyestuff question should be considered now, not on the narrow idea conveyed by Secretary Redfield's reference to expired and expiring patents.

If, however, Secretary Redfield had based this part of his report on a proper conception of the possibilities of research, there is little doubt that he would have laid emphasis on the value of a working clause in developing an artificial dyestuff industry in the United States, for he has had personal experience of its efficiency. On Feb. 8, 1912, in a speech in the House of Representatives, he gave this account of how a working clause in Canada had forced his firm to establish works in the Dominion:

My own concern is at this moment erecting a factory in Canada to manufacture goods in Canada, because, under the Canadian patent law we must manufacture within the Dominion of Canade, else we lose our patent. I say we must manufacture. We must manufacture or arrange to have the goods manufactured. The goods must be made there.

Before the war broke out last August the world outside of Germany failed to realize its perilous dependence on the German manufacturers of artificial dyestuffs. The way in which English, French, Russian and American manufacturers prided themselves on the beauty and fastness of the colors of their goods and guarded from prying eyes the dye house processes by which they were applied to the materials, was calculated to create the impression that there was something distinctively English, French, Russian or American in the shades. The war has changed all that by placing the label "Made in Germany"

on 80 per cent. of the artificial colors used in all countries. Instead of blindly allowing the existence of their industries to depend on German dyestuffs, England, Russia, France and the United States are now stirring themselves to find a way to industrial independence.

In view of the suddenness with which these countries have been awakened, it is not surprising that their ideas as to the course to take are confused. In England the supporters of free trade are ready to go to any limit, even government ownership of dyestuff works, to avoid a protective tariff, while a rapidly increasing number are advocating protection. In this country the professed free traders are also ready to accept protection in principle, if they can avoid it in the one form of tariff rates. Professed protectionists on the other hand are hesitating to accept a protective tariff on materials that are now on the free list, while still another contingent are urging that the American dyestuff industry be freed from the restrictions of our patent laws. The one striking feature of the situation is the lack of a comprehensive and settled policy on the part of either the interested trades, the government or the public in this and other countries. What is needed is a policy as sound and clearly defined as that under which Germany has reached her wonderful industrial development and which was summed up in these words by Bismarck:

> I have never in my life been doctrinaire. All systems by which parties are divided and bound together are of secondary moment. My first thought is of the nation, its position abroad, its independence, our organization in such a way that we may breathe freely in the world.

The industries of the United States will never be able to breathe freely until they have a reasonably complete dyestuff industry on American soil. Whether this industry is created by developing new enterprises here or by the establishment of branches of the great German monopoly is immaterial The essential is that the business be established in the United States in one way or the other. And to that end all parties and interests should adopt Bismarck's rule, abandon the role of the doctrinaire, and accept like practical men the methods by which dyestuffs for the United States shall be produced in the United States.

The British Wool Embargo

The efforts made by the Textile Alliance to secure from the British Government a modification of the embargo on exports of wool from the British Empire to the United States resulted in an agreement on the following plan, announcement of which was made on February 20 in a letter from A. M. Patterson, president of the Alliance, to A. E. Gill, president of the Boston Wool Trade Association:

> So far as details have been worked out, and subject to alteration and confirmation, the plan is as follows: Wool is to be shipped to A. M. Patterson, president of the Textile Alliance, Inc., permits to ship being granted presumably to the nominees of the Alliance. On receipt in the United States it will be held by the Alliance subject to the presentation of satisfactory guarantees against re-export of the wool itself or of tops or yarns made from it. A bond may be required, but generally will not. Re-sales are permitted subject to the giving of similar guarantees by the purchaser. There will be a charge by the Textile Alliance, Inc., which will be arranged next week at the meeting of its directors. There is nothing to prevent any person from obtaining licenses directly if he desires. The Alliance will make every effort to facilitate imports through the usual channels of transportation and banking. An office will be opened in Boston as soon as the plan is confirmed. It scarcely seems necessary to say that there will be no favoritism shown by the Alliance, as between dealers and manufacturers, or between large and small, but perhaps it is as well to make the statement definitely. There is one objection to the plan that we cannot meet. It will be necessary for the Alliance to learn many things about purchases and sales that principals would naturally prefer to keep to themselves. If not the Alliance, then some other person or body must be charged with the responsibility. No plan can be devised that is perfect. If one better than this can be found it will have our hearty support.

The Textile Alliance also sent the trade the following notice explaining the details of the plan:

> The form attached should be executed in duplicate and mailed to the Textile Alliance, Inc., at its Boston office when established, or at 45 East 17th St., New York City.
>
> Corporations or partnerships should sign their full name, showing the authority of the officer or partner signing. Signatures of employes and attorneys will not usually be acceptable.
>
> So far as the Alliance is informed, wools on which licenses will be issued comprise merino

wools, tops, noils and black face wool.

Licenses will be granted only in so far as the requirements of Great Britain and allied countries may allow.

The following notice has been cabled to us as published in London:

Consignment of wool will be received by A. M. Patterson, president of the Textile Alliance, Inc., and held at shipper's risk until delivery has been taken by destinatories. Before delivery destinatories must give satisfactory undertakings to A. M. Patterson, president of the Textile Alliance, Inc., in such manner as he may from time to time prescribe, as to disposal of wool. It is to be understood that wool so consigned to A. M. Patterson shall not be released in the United States of America by him until undertakings previously approved by British Ambassador shall be executed by recipients of wools. Licencees must understand granting of licenses does not assure that release of wool on arrival in United States of America necessarily follows:

A. M. Patterson, individually and as an officer of the corporation, and the Textile Alliance, Inc., must be held harmless in the matter and reserve right to refuse release in their absolute discretion.

(Applicant should retain this notice.)

(Attached Form)

Boston.....

No.....

A. M. Patterson, Esq.,

President, Textile Alliance, Inc.

Sir:—We request that through your representatives in London you will arrange for the issue of licenses under which wool may be exported from Great Britain (and) (or) Australia to you for our account. We undertake that prior to the delivery of such wools by you, we will enter into such agreements and undertakings as you require.

We hereby designate as our agents in London, Messrs.....and as our agents in Australia, Messrs..... and hereby authorize and empower them on our behalf to execute such applications, agreements and undertakings as may be required by the British or Colonial Government or may be deemed necessary by Messrs. Freshfields, solicitors for the Textile Alliance, Inc., or their correspondents in Australia.

We hereby release and agree to hold harmless the Textile Alliance, Inc., and A. M. Patterson individually and as an officer of the Alliance from all liability in connection with the said expectations.

On demand we will pay to the order of the Textile Alliance, Inc., the cost of cables relating to licenses and a charge not exceeding one per cent. of the invoice value of wool imported under licenses issued at your request; as such charge may from time to time be fixed by the directors of the Alliance. Yours truly,

In the presence of:

The publication of this plan immediately developed pronounced opposition among wool manufacturers, a number of whom met at the office of the American Woolen Co. on February 26 to consider what measures should be taken to secure a modification of the regulations. Among those present were Andrew Adie, president, United States Worsted Co.; Frederick S. Clark, president, Talbot Mills; Henry A. Francis, president, Pontoosuc Woolen Mfg. Co.; Louis B. Goodall, treasurer of the Goodall Worsted Co.; Theophilus King, treasurer, Atlantic Mills; William Maxwell, president, Hockanum Co.; William Whitman, of William Whitman & Co., and William M. Wood, president of the American Woolen Co. These manufacturers represented woolen and worsted machinery which, if run to its full capacity, would consume approximately 135,000,000 pounds of wool (scoured weight) per year, or about 40 per cent. of the wool consumed by all the mills in the United States. President William M. Wood addressed the meeting as follows:

I hope that the tentative arrangement made by the British Government with the Textile Alliance, through the new commercial attache, Sir Richard F. Crawford, to supervise the imports of wool from the United Kingdom and Australia, may be reconsidered. It is not that I have anything against the Textile Alliance or any of its officers. The alliance has done a useful work in its own way, and its officers are highly esteemed in our industry.

Eighty per cent. and more of Australian wool imported into this country comes to our port of Boston, and most of these wools are manufactured here in New England. I believe that the British Government can implicitly trust the New England manufacturers when they give their word that wools thus imported shall not be shipped out of the country.

If, however, the British Government as a war precaution does regard it as necessary to have wools consigned to one central authority, thereby saving labor, time and perplexities, I feel that this consignee should be neither a wool manufacturer nor a wool merchant. It seems to me there could be no possible objections to having the wool consigned to the British Consul at this port; but if he is, as I am told, already overworked, and if this plan is not practicable, I would prefer that the wool should be consigned to some disinterested, impartial person—not a wool manufacturer and not a wool merchant—whose knowledge of the wool consigned to him could not possibly be used, intentionally or unintentionally, to the advantage of any of our competitors in trade. Such a disinterested consignee could easily be found in this great mercantile community.

Boston is the greatest wool market on this continent, and it has a justifiable pride in this important trade and in the woolen industry of New England and America. I confess it is something of a shock to learn suddenly that the consignment of a large part of the wools that enter our port is to be directed by one far outside of this city, even

though an office for the purpose be maintained here.

This is a matter on which, so far as I know, the manufacturers of New England were not consulted before the designation of the Textile Alliance to receive imported wool was announced in the newspapers. The Textile Alliance, while it has done its own creditable work, has not been widely known in the woolen trade. Many manufacturers were not even aware of its existence. If a new and inconspicuous agency was thus to be selected, it might better have been a disinterested individual, in the mercantile community of Boston, to which most of these imported wools would come.

In what I have to say, I am not professing to speak for the Boston wool dealers. Their conditions are not just like our own. Their wools are ordinarily sold in broken lots to numerous customers; whereas the wools imported by the manufacturers, intended for early consumption by those who receive them, go direct to the mills.

Some delay is almost inevitable if all these wools for the mills are to be consigned to and supervised by a branch office of the Textile Alliance, which, meanwhile, is required to look after also the wool imported by the dealers of Boston, New York and Philadelphia. Then there is, also, the matter of additional expense. A charge of one per cent., which has been suggested, would in these days of depressed business and close figuring, be a real burden on the industry.

It would be like the proverbial last straw that broke the camel's back. I cannot but regard such a charge as unnecessary and excessive. It would amount to several thousand dollars upon a fairly large consignment, where the actual cost of supervising and passing the wool would not be more than a few hundred dollars, at the outside. This work should be done for the actual cost and no more. I think manufacturers generally would be unwilling to pay large sums for legal services which they did not actually engage.

My idea would be to have a separate agency here at Boston to receive and promptly deliver all wools bought by manufacturers, and another separate agency for the wool dealers, each paying the cost of the actual undertaking and no more.

I believe if this commends itself to the meeting we should immediately communicate it to the meeting of the full executive committee of the National Association, which is to be held in New York next week, and that the conclusions of that committee be communicated in turn to the British embassy at Washington.

In order to reassure the British Government of our honest intentions, I would be willing, speaking for the corporation which I represent, to give the most binding guarantee not only that no wools should be re-exported but that no manufactures of these wools should in any manner reach any enemy of Great Britain.

The Textile Alliance, Inc., has the following officers: President, A. M. Patterson, of Patterson & Greenough, selling agents of the Waterloo (N. Y.) Woolen Manufacturing Company, with offices at 45 East 17th St.; vice-president, Caesar Cone, president of the Proximity Manufacturing Company, Greensboro, N. C., and of the firm of Cone Export and Commission Company, 74 Worth St.; secretary and treasurer, J. J. Nevins, secretary of the American Association of Woolen and Worsted Manufacturers, also with offices at 45 East 17th St.

Under this title, Mr. Patterson, of New York, will in effect control all importations from England and Australia into this country. He proposes to charge us for his services at the rate of one per cent. and all transactions as they come through him must be fully submitted, giving cost price, because he charges on a percentage basis, and giving the name of the parties to whom the wools are sold, because all sales are subject to his consent.

He insists on all wools being under his direct control until they are spun into the yarns. He reserved the privilege of inspecting mills where the wools go that are bought from importers who ship through the Textile Alliance. The bankers will, of course, have to give up their title and consequently must insist on being held harmless in doing so, and anyone who imports through A. M. Patterson must agree to hold him harmless in every way because he signs as follows:

"We hereby release and agree to hold harmless the Textile Alliance, Inc., and A. M. Patterson individually and as an officer of the Alliance, from all liability in connection with said exportations, and on demand will pay to the order of the Textile Alliance, Inc., a charge not exceeding one per cent."

Mr. Patterson also insists that licensees must understand that granting of licenses does not assure the release of the wool in the United States of America and that Mr. Patterson must be held harmless in the matter and reserves the right to refuse to release any wool at his absolute discretion. This means that after the wool once gets to America and in his possession, if Mr. Patterson sees fit, he can, for an unlimited time hold the wool, preventing the importer from getting possession of it.

This seems to be a monstrous proposition when one considers that a great many small merchants, or mills that import wools, have to pay the bankers when bills of exchange come due and are unable to sell or deliver the wool until Mr. Patterson so agrees. A most emphatic protest should be made to such a proposition.

A great many points are objectionable in regard to this: First: Mr. Patterson, himself a manufacturing competitor, will know the amount of all commitments every importer is liable for.

He will know how much and what kind the different manufacturers use.

He reserves the right to follow the wool to the mill until it is put into goods.

He assumes absolutely no liability in case any of this property should disappear as he will not be responsible for the wool.

Mr. Patterson will have in his absolute possession all the wool so imported and it is in his power to prevent any manufacturer, if he so desires, from using wools so imported under such an agreement, and also to prevent the sale on the part of any dealer to any other dealer or manufacturer, and by so doing, may cause great damage, not only to the manufacturer, but also to the dealer.

I believe and repeat that I have no doubt that England will be perfectly satisfied, under proper guarantee that the wool shall not reach the enemy, to allow free importations of wools for which they

have given licenses and permits to come to this country. It is believed that the English Government's only aim is to prevent Australian wools, noils, tops or varns from being shipped to its enemies, which can easily be complied with without those monstrous conditions imposed by Mr. Patterson and without charge.

Although Mr. Patterson's announcement of the plan was addressed to President Gill, of the Boston Wool Trade Association, that gentleman informs us that his Association has not taken any action in regard to the arrangements made by the Alliance and does not intend to do so; that any approval or disapproval of the plan on the part of the wool trade must come from the dealers acting as individuals; and that there is no compulsion, as no one desiring to import wool is compelled to avail himself of the Alliance plan, but is at liberty to make independent arrangements.

A few days after the Boston meeting of protest against the plans made by the Textile Alliance, the State Department at Washington made public the following cablegram from the American Consul General at London:

London, Feb. 23, 1915.

Secretary of State,
Washington, D. C.

All arrangements covering licenses to export prohibited goods transferred to War Trade Department 4, Central Building, Westminster, to which inquiries should be addressed. Rubber Committee and Wool Committee merged into this department. Plan now in operation whereby merino and blackfaced wools go forward under license to Textile Alliance of United States.

(Signed) Skinner,
Consul General.

It seems as if the complications that have arisen over the lifting of the wool embargo, might easily be smoothed out. The British Empire is engaged in one of the greatest wars in the history of the world, and the embargo it is placing on the export of British wool is a reasonable and proper measure for bringing the life and death struggle to a successful issue. It is, moreover, evident that the British Government is willing to allow such British wool to be exported to the United States as is not needed in Great Britain, providing it does not reach the enemy. Under such conditions any rules for exporting wool must necessarily be of a drastic character, centralizing the responsibility and enabling the authorities to prevent any breach of the regulations. The character of the regulations is a matter on which the British Government is the sole arbiter, and the American wool trade must needs submit to any decision the British authorities may reach on that point. The objection raised by President Wood of the American Woolen Co. to placing the control of the plan in the hands of a wool manufacturer or anyone connected with the wool trade is sound. Privacy in business matters is one of the elementary principles of business, and can easily be respected in importing British wool by selecting some one not identified with the trade to supervise operations.

—:—

Wool, Tops and Yarn

The imports of wool, tops and wool yarn for the six months ending December, 1914, are reported by the Bureau of Foreign and Domestic Commerce as follows:

Clothing and Combing Wool, Free		
July ..... lbs.	13,680,588	$4,720,650
August	11,700,980	3,089,974
September	9,096,205	2,315,488
October	7,543,479	1,844,032
November	2,919,260	629,416
December	962,219	194,810
Carpet Wool, Free		
July ..... lbs.	6,150,565	$1,028,569
August	4,777,641	769,841
September	4,705,674	773,637
October	3,942,256	641,568
November	2,541,724	457,522
December	1,955,252	328,200
Mohair, 15 per cent. ad val.		
July ..... lbs.	309,250	$101,930
August	238,490	93,848
September	407,651	141,040
October	470,995	169,545
November	443,466	171,401
December	308,911	115,648
Tops, 8 per cent.		
July ..... lbs.	1,064,988	$578,152
August	369,230	191,774
September	563,477	270,546
October	433,688	192,899
November	193,878	79,848
December	75,468	27,615
Yarn, 18 per cent.		
July ..... lbs.	755,956	$544,974
August	307,825	223,713
September	277,355	186,235
October	374,420	247,750
November	83,234	66,712
December	142,255	97,064

Great Cry and Little Wool

The high cost of distributing wool goods from the mills to the ultimate consumers and the method by which the consumers are misled into believing that the cost of the garment ready to wear is materially affected by the price of wool, were forcibly illustrated recently by an advertisement of one of the leading manufacturing retail clothing firms of New England.

This advertisement began with photographic copies (A and B) of the following quotations for scoured territory wools on February, 1914 and 1915, showing the advance in prices during the past year:

February	(A)—1914	(B)—1915
Fine staple	55 at 57	70 at 71
Fine medium staple	51 at 53	65 at 67
Fine clothing	51 at 53	65 at 68
Fine medium clothing	49 at 51	63 at 65
1/2 blood combing	53 at 54	67 at 70
3/8 blood combing	46 at 48	62 at 64
1/4 blood combing	41 at 42	57 at 60

Alongside of these exhibits was a photographic reproduction (C) of the following letter from Brown & Adams, wool dealers of Boston. The clothing advertiser's letter of inquiry and the wool dealer's reply bore the same date and appeared in the advertisement the following day:

Boston, Feb. 18, 1915.

Dear Sir:—We note your inquiry of today concerning the raw wool market.

You doubtless know that as a direct result of the European war there has been an unprecedented demand for wool goods suitable for military purposes. This demand has been, to a great extent, on the medium and low grades of wool with the result that these wools show an advance of 35 to 40 per cent. since last October. The demand for fine wools has not been so pressing, but notwithstanding this fine wools have advanced 15 to 20 per cent. since last October. Stocks of wool the world over were light the first of January and the situation regarding supplies is very acute. As long as the European war continues there is bound to be this tremendous demand for goods for military purposes and it is fair to assume that all grades of wool will continue to advance in price. If the embargo on Australian merino wool is raised it may prevent wool values in this country being forced to extreme heights.

Truly,

Brown & Adams.

Having impressed the consumer by this documentary evidence, the advertising clothiers came at once to the main point of their argument, namely, the effect, actual and prospective, of the advance in wool on the retail price of clothing:

Exhibits (A), (B) and (C) must remove the last vestige of doubt in your mind that men's clothing is surely destined for higher prices.

Compare the prices of wool, gentlemen, as reproduced here from the Commercial Bulletin of one year ago and the same paper's edition published in February of this year.

There is no mystery or magic about this. Wool is now at its highest prices in forty years and, more than that, seems sure to go much higher.

The great Boston wool house of Brown & Adams, conservative as their letter is, nevertheless shows that there is something of tremendous import about to happen in the wool situation.

This can mean only one thing: That next year prices will be materially increased on the clothes that you have to buy.

Ignorant of the technical conditions of wool manufacturing, the retail buyers of ready-to-wear clothing would, almost without exception, accept the advertising exhibit as conclusive evidence justifying a material advance in prices. That such a conclusion is wide of the truth is easily demonstrated from the price quotations given in the advertisement. Let us take for illustration the fine medium clothing wool, which advanced 14 cents per scoured pound between February, 1914, and February, 1915, and assume that it is manufactured into a 14-ounce woolen cassimere. Three and one-half yards or 49 ounces of this cloth is required to make a suit of clothes. Allowing 30 per cent. for loss of weight in manufacturing this quantity of cloth would require 70 ounces (4 3/8 lbs.) of scoured wool. The advance of 14 cents a pound in the market price of this wool, as quoted in the clothier's advertisement, would, therefore, amount to only 61 cents on the wool required to make a suit of clothes, assuming that the entire increase is added to the price of the cloth by the cloth manufacturer. As a matter of fact this assumption is unwarranted because wool manufacturers have found it impossible to obtain an advance on goods corresponding to the increase in the cost of wool.

Farther on we find in the same advertisement an announcement that the clothing firm will refund to the buyer 25 per cent of the price of the suit. Mixed suits for which the regular prices vary from $15 to $40 (an average of $27.50) will cost the consumer

from $11 to $29 (an average of $20), thus making an average refund of $7.50 per suit to the purchaser. It is a reasonable assumption that the advertising clothiers still retain a profit after giving their customers this refund. As the fine medium territory wool used in foregoing calculation represents fairly the wool used in a medium priced suit, we find this firm of manufacturing retail clothiers offering to give an average refund of $7.50 to the purchaser of a suit and in the same announcement trying to scare the public with a threat of higher prices for clothing because of an advance in wool prices, which, even if it were all added to the price of clothing, would mean an increase of only 61 cents in the cost of a suit of clothes.

The serious situation in the textile industry as a result of the greatest war in the history of the world is beyond question. Every branch of the textile trade has been forced to bear the burden in a greater or less degree. The blow has fallen with especial force on consumers because of the loss of employment. And the producers who have been placed in a position of the greatest difficulty are the wool manufacturers, who on one hand have been forced to pay the full amount of the advance in the price of wool at a time when the stocks of wool are near the famine level, while on the other hand they have been unable to obtain an increase in the price of their cloth to offset the advance in the raw material. Business, of course, is business, and no great amount of fault can be found with the business man who improves the shining hour to increase his profits. Even in the present dark hour that policy of personal profit is justifiable within certain limits. But the limit is left far behind when a firm in the clothing trade, who buy from the mills, use a letter from a firm of wool dealers, who sell to the mills, to mislead the consuming public into the belief that the advance in the price of wool during the past year warrants a material increase in the retail price of men's clothing.

The facts should be made public. The cost of the cloth forms but a small fraction of the retail price of a suit of men's clothes. The clothing trade is resisting the slight advance in the price of cloth needed to offset the advance in wool. At the same time a representative firm of clothiers partially discloses their profits by offering their customers an average rebate of $7.50 per suit, while in the same announcement they threaten the public with a material advance in prices for clothing because of an advance in wool which as a matter of fact amounts to only 61 cents per suit. The essential facts are that so far the advance in the price of wool is equivalent approximately to only 3 per cent. in the retail price of clothing, an amount so small that it would be difficult to add it to the retail price of a suit of clothes.

The Situation in Germany

"The Deutsche Wollen-Gewerbe" states that the Association of German Cloth Brokers and Wholesalers has announced an increase in the price of goods intended for clothing the civil population. All winter goods are advanced at least 10 per cent., trouserings and cotton goods at least 6 per cent. unless greater advances are found necessary; tailors' trimmings are advanced 10 per cent.

GOVERNMENT SEIZES BLANKETS

"The Deutsche Wollen-Gewerbe" gives the following report of an official order forbidding the sale of army blankets: The Government has issued a proclamation informing dealers in woolen, wool mixed, half wool and cotton blankets in all parts of the empire that the sale of their stocks of army blankets except for military and naval purposes, is forbidden. Each manufacturer or dealer is required to give the authorities a statement of their stocks in excess of fifty pieces.

MAXIMUM PRICES FOR KNITTING YARN

The "Deutsche Wollen-Gewerbe" reports that the German Minister of War has ordered three kinds of knitting yarn added to the list of articles of wool that are to be sold at fixed prices to the wholesalers, who on their part are required to sell them at certain stipulated prices. The retail prices are

also fixed by official order which are to be printed on the labels. The spinner is required to bind the wholesaler and the latter in turn binds the retailer by an agreement to resell the yarn at the price named. The quantity of raw wool seized by the Government at Roubaix-Tourcoing was so large that after covering the requirements of the army for military cloth, about 1,100,000 pounds has been left available for private use. This quantity will be delivered to the mills in the near future.

The Berliner Tageblatt gives the following additional details regarding the stringent regulations to which the German trade in knitting yarn is subjected:

The War Department has made arrangements by which German spinners of worsted knitting yarn are to manufacture the raw wool which has been seized in Belgium and France. The order to this effect is as follows:

> The spinners will deliver the yarn only to wholesalers who are bound by agreement to sell the yarn at the following prices:
>
> No. 1 quality 7.80 M. per kilo (.85 cents per lb.).
> No. 2 quality 7.40 M. per kilo (.80 1/2 cents per lb.).
> No. 3 quality (7.00 M. per kilo (.763 cents per lb.).
>
> Terms to be net cash at place of delivery. The wholesaler must sign an agreement made out by the War Department subjecting him to punishment if the terms of the agreement are evaded in any way. The prices at which the yarn is sold to the wholesaler by the spinner are likewise fixed by the government, as well as the style of packing, and no variation is allowed. The yarn bears the label "War Wool" and is to be spun only in the gray state. The retailer must also give the wholesaler a written pledge without which no yarn can be delivered to him. Following are the retail prices:
>
> No. 1 quality 5.25 M. per 1/2 kilo ($1.145 per lb.).
> No. 2 quality 5.00 M. per 1/2 kilo ($1.09 per lb.).
> No. 3 quality 4.75 M. per 1/2 kilo ($1.036 per lb.).
>
> The quantity of raw wool to be delivered to the various spinners has not yet been regulated. The yarn is to be delivered in March and April.

These regulations illustrate not only the extent to which the German government is regulating private business, but incidentally they show a significant departure from the decimal division of the metric system of weights and measures. The kilogram is used for wholesale trade because the particular size of the metric unit is largely negligible when indicating the weight of material in bulk. When it comes to delivering the goods to the ultimate consumer, the kilogram (2.2 lbs.) is found to be too large for many purposes, and so a half of it is used and called a pound (pfund) (equal to 1.1 English pounds). This German pound in turn can be and is divided into quarters and eighths because binary divisions are the most natural for the human mind to grasp. It is when dealing with the ultimate consumer that weights and measures come into the most direct and elementary contact with the human understanding.

NO STARCH FOR FINISHING TEXTILES

The supply of starch for finishing cotton goods has become so depleted that the "Verband der deutscher Veredlungs-Anstalten fuer baumwollene Gewebe", Leipzig, has sent out the following circular notifying the trade that cotton cloths can no longer be finished by the customary methods:

We beg to inform our customers that our finishing works have been deprived of the materials necessary for finishing. Some of these materials can be obtained only with the greatest difficulty and others not at all. The latter include all starch products. These have been recently seized by the Government and up to the present time it is uncertain what quantity will be available for industrial uses. As a result of this situation we will be unable to fill orders for finishing goods by the usual methods after our present stocks of starch are exhausted. In giving this notice to our customers we improve the opportunity of advising them that it is for their interests not to rely on the continuance of present prices for finishing. In view of the extraordinary advance in the price of all materials and in the cost of production it will soon be necessary for us to advance on short notice the prices for finishing.

DEVELOPING A HOME SUPPLY OF HEMP

The committee on hemp growing appointed by the German Association of Hemp Manufacturers, has decided to give the growers of hemp a guarantee to purchase all of their production under certain conditions. The committee expects that at least 90 per cent. of the crop will yield a gross return of 600 to 800 marks per hectar ($58 to $77 per acre). The committee representing the

manufacturers will sell hemp seed to the growers at 60 M. per 100 kilograms (6 1/2 cents per lb.), although the cost is double that amount at the present time.

SUBSTITUTE FOR JUTE

The "Wochenberichte der Leipziger Monatschrift fuer Textil-Industrie" states that the Minister of Trade and Commerce has sent the following notice to the war committee of the German industry:

> The present scarcity of jute makes it necessary to use substitutes so far as possible. Among the substitutes for jute is a fiber made from straw and known as "stranfa", which is manufactured by the "Mechanischen Weberei von Groening" in Mesum on the Rhine. Experiments by the war department have demonstrated the value of "stranfa" sacks for provender of various kinds, although it is not suited for meal. As the authorities have adopted "stranfa" for military purposes as a result of their experiments, it is desirable that "stranfa" sacks also be used for private industries. I ask the various trades to use this substitute for jute.

A GERMAN MESSAGE FROM AMERICA

A German garment dyer now in the United States sent the "Deutsche Faerber-Zeitung", Wittenberg, this account of his experience in America:

I have been in this country nearly two years, having been employed in New York, Boston and Salt Lake City. The methods employed in the dye shops here are about the same as in Germany. German dyestuffs only are used and since the war they have become very scarce, it being impossible to obtain certain kinds. Nearly all of them are applied direct, very few with acid.

The method of cleansing with benzine is the same as in Germany, but it is impossible to obtain a good benzine soap. For this reason I was glad to read in the "Faerber-Zeitung" an article on the manufacture of a good soap. I have made this soap here and used it with the best results.

Electric irons are in general use for pressing and machines are employed for pressing men's wear. A machine will press three suits an hour and sometimes more. The wages for experienced help in the large cities are $20 and above per week; in smaller places as high as $30 is paid. The proprietors of the dye works are principally Germans, also the operators, dyers, benzine washers and cleansers and experts. Board and room for a man costs from $6 to $8 per week.

You may be interested in learning that a very bitter anti-German feeling prevails in America and is stimulated by the English-American newspapers. The Government is making itself responsible for frequent breaches of neutrality by reason of the export of arms and similar materials. I need not assure you that there are here many German hearts beating for the old Fatherland. It is our earnest desire to rush to the assistance of the Fatherland, but this is prevented by England. We all count confidently on the victory of Germany and the right. Deutschland Hurra!

SEIZURE OF WOOL AND WOOL GOODS

The "Deutsche Wollen-Gewerbe" gives the following account of the wool and wool goods seized by the German Government in France:

Our troops have taken possession of an extraordinarily large quantity of raw material and finished goods in the leading French manufacturing districts such as Roubaix, Tourcoing and Lille, the material being valued at about $200,000,000. Herr Fraenkel, a wool expert of Munich, who is in the service of the Bavarian Government, gives some interesting particulars regarding these stocks. In addition to the large quantity of wool, noils, wool waste, cotton, skins, fur, leather, oils, metals, etc., there was also a large quantity of partly and wholly manufactured goods. When our troops took possession of Lille they were able to send hundreds of pieces of finished army goods to the Commissary Department. These goods were seized as the property of the French Government, to be used in the manufacture of clothing and footwear for our soldiers. The War Department has started a number of mills in the conquered territory. In North France three blanket mills are running under our management. Important economic results will follow from gaining possession of so large a stock of raw material.

THE WOOL FAMINE

The following order issued by the Prussian Minister of War giving directions for the disposal of noils, wool waste and low sorts at Leipzig shows that the scarcity of wool in Germany has become so acute that wool stock which ordinarily is unsuitable for military cloth is now used for army goods:

The Wool Trade Association of Leipzig has been charged with the sale of all kinds of noils, wool waste and low sorts that have been seized in the enemy's country and which are not suitable for the manufacture of military cloth and substitutes for worsted goods. These materials are to be delivered only to those manufacturers who certify that the stock is needed for filling army orders. The quantities delivered must not exceed the current needs for the army contracts. The prices for the materials are to be fixed by a committee of experts with an impartial chairman, all to be appointed by the Minister of War. The Wool Trade Association and the expert committee is to be subject to orders of a commissioner from the Prussian War Department, and also under the supervision of the Leipzig Chamber of Commerce.

COLLECTING WOOL GARMENTS

The correspondent of the London "Morning Post" at Berne, Switzerland, states that articles of wool are now being collected

from house to house throughout Germany. After being disinfected the material is used for the army. School children have been enlisted in the work of collecting the goods and carrying them to the distributing vans.

MAXIMUM PRICES FOR WOOL

The list of maximum prices for wool, published in our February issue, which the German government put into effect on December 22, has brought out earnest complaints from the wool trade. The difficulties are not unlike those connected with a specific tariff on wool. Fixed prices for grease wool regardless of shrinkage or intrinsic values lead to extreme anomalies. The Bundesrat sought to meet the difficulty by graduating the fixed prices according to the quality of the wool, but this fell far short of meeting the requirements because quality alone does not regulate value, and furthermore the order took no account of the difference in the shrinkage in scouring. As a result the German Association of Merino Wool Growers has issued this statement regarding the situation:

It is to be regretted that the Bundesrat did not give detailed directions for administering the order establishing maximum prices for wool. This failure to provide instructions may cause a great many embarrassments in the trade. Take for example a lot of wool that shrinks in scouring much more than the amount estimated by both buyer and seller, causing the scoured price to exceed the maximum. Who is to be held responsible for the difference? Moreover the various prices named in the order are adjusted only to the quality or fineness of the wool. They take no account of the length of the wool, although the value depends in large measure on the staple. It does not seem possible that the intention was to fix the same maximum price on a 12 months wool suited for warp and a short six months wool merely because the two happened to be of the same quality.

It is to be hoped that all these difficulties resulting from the failure to give detailed instructions for administering the maximum prices on wool may soon be removed by the necessary directions from the authorities. As it has been deemed necessary to issue this maximum price order, it is imperative that a clear explanation of its meaning should be given to the trade at once. The object of maximum prices on wool could be attained if the authorities would content themselves with fixing maximum prices for cloth and wool goods for military purposes. If that were done the price for raw wool in all branches of the trade and industry would be automatically regulated.

Secretary Redfield and the Textile Industry

The following letter from Secretary of Commerce Redfield relates to our November comment on his criticism of methods in the New England textile industry during the political campaign last fall:

Department of Commerce.

Washington, Feb. 5, 1915.

Dear Sir: Your favor of the 3rd inst. with its enclosure is received and shall have careful attention.

May I take this occasion to say that in your December issue, page 63a, you use these words:

> "The paragraph which Secretary Redfield does not recognize is from the report of his speech in Cypress Hall, Cambridge, Mass., on October 21, 1914. It appears in the Boston Herald of the next day."

Permit me to say that there was no stenographer present on this occasion except my own secretary who took verbatim all that was said. I have caused a careful examination of his notes to be made. The paragraph which you quote was not used by me and formed no portion of my address.

I venture to suggest that your experience as an editor should have shown you the possible injustice in criticizing a public man on the basis of a newspaper statement without taking any steps to verify it, and that an apology from you is in order because you have published criticisms based upon statements that were never made and which you used as the basis for your criticisms without taking any steps to ascertain their truth.

Yours very truly,

William C. Redfield, Secretary.

The passage in question is the first of the following four paragraphs quoted from Secretary Redfield's New England speeches:

The remedy for New England Manufacturers is not protection, but the introduction of up-to-date machinery in textile mills, the installing of efficiency and cost-keeping methods and the elimination of the speculative profit schemes.

Too little has it been true that these mills have been managed either with a keen and searching knowledge of scientific manufacturing or with a due regard to the righteous and righteously growing demands of the men and women who labor in those mills, and are of far greater value to the nation than the mills are.

The Democratic industrial policy is a policy of adult manhood. The very word "protection" which our Republican friends have adopted is itself a confession of weakness, and its cult is that of industrial cowardice. Nothing needs protection unless it is relatively feeble, and feebleness is in its nature timid, and timidity is not the characterstic of men.

We have the right to expect from the employer also that he shall know his job, do the best he can and be willing to learn.

In our December issue we published a letter from Secretary Redfield replying in detail to our November comments. At that time he made the following acknowledgment of having used the last three paragraphs, but was not certain about the first one:

> On page 56, you do not say in what speech the first paragraph which you quote from me appears. I recognize as my own the last three paragraphs you quote, but the first one is a stranger. My confidential secretary, who accompanied me to New England, does not recall it. Where were these words said and when?

It is a common and a wholly commendable custom for political campaign speakers to give to the press advance copies of the speeches which they intend to deliver at the various places to which they are assigned. This practice offers a number of advantages. It avoids the expense of stenographic reports of the speeches; it prevents the unintentional misquoting of the speakers; and it enables the campaigners to devote their time to the oral discussion of local issues or the entertainment of their audiences with anecdotes, while the more serious discussion of State or national issues reaches the vastly larger audience by means of the printed page on the following morning.

We have carefully investigated the circumstances connected with the press reports of Secretary Redfield's speech on Oct. 21, 1914, and the evidence goes to show that these reports were taken from advance copies supplied for that purpose. The Boston Herald informs us that this was the case with that paper and the Boston Post states that its report was obtained in the same way. That being so it becomes immaterial whether Secretary Redfield made Cypress Hall reverberate with the words he now seeks to repudiate or not. The essential point is whether those words constitute a correct report of the views expressed by him regarding the textile industry during his tour through New England. The paragraph in question reports the Secretary of Commerce as stating that "the remedy for New England manufacturers was not protection, but the introduction of up-to-date machinery in the textile industry, the installing of efficiency and cost-keeping methods and the elimination of the speculative profit schemes."

Let us compare that passage, which Secretary Redfield now calls into question, with the reports of his New England speeches last fall by papers that were his political supporters. We find this in the report of his Cambridge speech by the Boston Post of October 22:

> Such troubles as New England manufacturers have been experiencing are due more to individual or local shortcomings than to the Democratic administration and the tariff. These last have increased both real business opportunities and prosperity. This was the import of the message brought to New England by Secretary Redfield of the Department of Commerce and Labor in a speech at a rally for Congressman Deitrick in Cypress Hall, Cambridge, last evening.
>
> Behind the Times: Putting financiering before manufacturing efficiency and failing to keep up with the times in their producing method were, the secretary thought, at the root of the woes of some New England manufacturers, . . . "There are those in New England who do not want the Government to know conditions in their plants, and where this occurs, it is commonly for one of two reasons: First, they do not want it known they are operating with antiquated machinery or poor methods and with little or no knowledge of costs; or second, they do not want the light thrown on them because either with good management or bad their profits are such that they do not wish them known."

This passage from the Post is literally identical with one that appears in the Herald of the same date, so that we find two newspapers, one opposed and the other supporting the Secretary, which give the same report of his statements at Cambridge regarding inefficiency, bad business methods and antiquated equipment in New England textile mills.

It was not alone at Cambridge that Secretary Redfield was reported as denouncing the inefficiency and out-of-date methods of New England textile mills. The "Nashua (N. H.) Telegraph" of October 20 reported him as making general statements to the same effect in that city on October 19. His tour took him to Providence, R. I., where on October 23 he made a speech in which his political supporter, the Providence Journal, reports him as making this statement:

> The whole atmosphere of doubt and fearfulness which pervades many industrial minds is the heir and inheritor of the protective tariff policy. Nothing needs protection unless it is relatively feeble as compared with that against which it is to be protected, and feebleness is in its nature timid, and timidity is not the characteristic of men.
>
> I affirm on information which is strong, and on

belief which is justified, that the mills of New England need less protection and more cost keeping; fewer customs duties and more self-criticism; less bias and bigoted industrial prejudice, and more openness of mind to see what modern manufacturing means as many of their fellows in other sections, and some, thank God, in this one, have already seen it.

The denunciation of the backwardness and inefficiency of New England textile mills by Secretary Redfield was the feature of the Democratic campaign last fall. It attracted wide attention and at the time was the subject of much comment. It has never been disclaimed by the Secretary of Commerce. The reports of it were all to the same effect, being either literally or substantially in agreement with the passages we have just taken from the Boston Herald, the Boston Post and the Providence Journal.

As can readily be seen from the extracts we have quoted, the paragraph used in November was a very moderate expression of the statements regarding New England textile methods made by Secretary Redfield on that political tour. All the comments we made in November on that paragraph would have gained additional force if the statements ascribed to Secretary Redfield by both his supporters and opponents had been used in its place.

The paragraphs we quoted in November represented not only the statements Secretary Redfield spread broadcast throughout New England last fall, but they are in exact agreement with the doctrine he has preached since his entry into national politics four years ago. It will be of some interest to compare a few extracts from his addresses in and out of Congress with the views expressed in the passages from his New England speeches last October:

Discussing the tariff on wool and wool goods in the House of Representatives on June 12, 1911, Mr. Redfield made this assertion regarding cost keeping in textile mills:

> And right here I will say without any question of hesitation that a large number of your textile mills keep no costs at all. They do not know what their goods costs them now.

Here is another statement on the same occasion:

> How many American manufacturers are willing to have their methods of production and cost accounts openly analyzed to show whether or not they could produce goods cheaper than a foreign manufacturer. There is no reason for taxing the whole American people because either manufacturers are lacking in scientific study of their own business or unwilling to let the facts come out.

This is from the same speech:

> Misleading and inaccurate statements frequently arise from lack of accurate accounting and cost keeping. Manufacturers are frequently ignorant of their own costs. I know of one so ignorant of his own business that he had $400,000 stolen from him, Mr. Chairman, and yet he did not know it.

On the same day he made this statement:

> I recall three woolen mills that stood idle for years because their machinery was out of date and they would not replace it, and another that was idle and stood idle because it was three miles from a railroad and the cartage killed it. These are the things that do it, and not the difference in the wage rate.

On Jan. 3, 1912, he made this statement before the National Democratic Club at New York:

> I am told and believe it to be true that but few American manufacturers really know the cost of their goods, and but very few the cost of each operation in making their goods.

On June 4, 1912, in the House of Representatives, Mr. Redfield repeated the charges with this picture of industrial decadence:

> It is to this pass that the woolen industry has come under protection; paying the lowest or almost the lowest relative wages in America; operating mills filled with mechanical wrecks. It wonders why its costs are high; complains of its inefficiency; charges us 67 per cent. more for the same goods than the price at which they are sold abroad, and cries for a continuance of a 90 per cent. duty. (Applause) The picture is shocking. Deprived of initiative; lost to the sense of self-help; supinely content with excessive costs; living in the stone age of industry.

And in the same speech he sought to clinch his assertions with this evidence:

> I asked a young man whom I had known for years and who was employed in the office of one of the largest woolen companies whether they kept any accurate continuous record of the costs of manufacture in each department of that mill. He said "No."

And with this:

> But this is not the whole. The standards of the industry are low. The report (of the Tariff Board) says 80 per cent. of loom production on worsteds and 70 per cent. on woolens are the manufacturers' desired standards of efficiency. In a large New England machine shop some months ago the manager found his automatic machines running at 80 per cent. efficiency and not content therewith sought to improve them. By raising the pay of his men and by instructing them and

by the study of time losses, in a short time he brought the efficiency of all those machines up to 96 per cent.

He closed with this declaration of independence:

> We would substitute for a protective tariff platform a new declaration of industrial independence. We offer an affirmative, not a negative, teaching. We would replace protection with self-help, childhood with manhood, shackles with freedom. Our industries will never be as strong and sturdy as they ought till they become self-reliant.

Pages could be filled with extracts of like import from the speeches of the Hon. W. C. Redfield. What we have given here will serve to show that the paragraph quoted in our November, 1914, issue and which Secretary Redfield tries to repudiate, was a moderate expression, not only of his charges against the textile mills last fall, but of the charges against the same industry with which he has filled the record for four years. During this period Mr. Redfield has industriously blackened the reputation of the textile trade, holding it up before this and other countries as lacking initiative, operating out-of-date machinery, ignorant of cost and lost to the sense of self-help. And he has made these charges, not on knowledge of facts, but in the enthusiasm born of personal opinions formed by contact with other and widely different industries and on hearsay evidence deserving of no consideration whatever. His reference to the efficiency of woolen mills, for example, shows a lack of even an elementary familiarity with wool manufacturing processes; for he confuses the efficiency of the industry with percentage efficiency of a loom, whereas the two have but a remote relation to each other; thinks that 70 and 80 per cent. is necessarily low for loom production, whereas they may be high, the question depending on the class of goods manufactured; and then compares the loom efficiency thus misunderstood with the efficiency of an automatic machine in a machine shop. Condemning an industry without the necessary familiarity with its processes, Mr. Redfield has also allowed himself to be deceived into accepting flimsy hearsay evidence supporting his own preconceived opinion of textile manufacturing in the United States.

Nevertheless his attempt to disclaim the charges he made against New England mills last fall is an encouraging sign that time and the responsibilities of administration are bringing home to him a keener appreciation of the value of accuracy, and weakening his confidence in opinions regarding an industry in which he has had no personal experience. If, as now seems to be the case, he realizes that in his zeal he has unintentionally done an injustice to a great industry, there is one safe course open to him, namely, to avoid repeating that mistake in the future; this he can do with or without a public acknowledgment of his error. One course, however, he should not take, and that is to seek in any way to repudiate the record which is to be found in such voluminous and enduring form.

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS

The spring meeting of the National Association of Cotton Manufacturers will be one of unusual interest, as the Committee on Meeting plans a departure from previous conventions held in Boston. Perhaps the most important as affecting the general character of the convention is the change in the place of meeting from the Technology Building to the Copley-Plaza Hotel in Copley Square, where all the sessions will be held. It is probable that most members from out of town will take rooms there, especially as the management has promised reduced rates to those who make early application, and it is suggested that it would be advisable to make reservations promptly to secure desired accommodations. When Boston meetings have been held in previous years when there has been no machinery exhibition the tendency has been for the visitors to scatter as there has been no official hotel headquarters where they could gather after the meetings. This plan of making the Copley-Plaza the official headquarters for meetings as well as for the social gathering will result in holding the attendance together.

The dates have been fixed for Wednesday and Thursday, April 28 and 29. There will

be a morning session on the 28th but no afternoon session. On the evening of Wednesday, the 28th, there will be the big social feature of the convention, viz., a banquet at the Copley-Plaza for which speakers of national reputation will be secured. The business meetings will continue on Thursday morning and afternoon and the plan which worked so successfully at Lenox last autumn will be carried out with some modifications designed to promote still further discussion. It will be recalled that at the Lenox session, the papers were not read in full, but having been previously printed, were distributed to the members in advance of the meeting so that there should be opportunity to read them and prepare for discussion. The author of the paper will be given from five to ten minutes to present an abstract and then the paper will be discussed. Careful consideration is being given to the program so that papers of varied interest will be selected.

Two subjects of timely importance will be specially featured and receive thorough discussion, viz., the vital question of dyestuff supply and the matter of concrete mill construction from the standpoint of fire resisting qualities and practical mill operation in the light of actual experience.

In view of the importance and interest of the dinner on Wednesday night, it is suggested that the members do not make other engagements for that evening so that all attending the convention may get together at this banquet.

The new plan will undoubtedly result in large attendance and lend dignity and interest to the proceedings and greater opportunity for social enjoyment.

At a recent meeting of the Board of Governors the treasurer called attention to the very considerable number of members who were in arrears for their annual dues. Most of the members are busy mill men who perhaps may not give much thought to the Association until the meetings come around, but they are desirous of retaining their membership in good standing. They should bear in mind that an association like this must be supported by prompt payment of dues and it is hoped that at the time of the spring meeting the treasurer will be able to report that there are no members in arrears.

The Committee on Meeting, which is responsible for the attractive new plans proposed, is composed of Franklin W. Hobbs, Nathaniel F. Ayer, Charles H. Fish, Stephen C. Lowe, Frederick W. Parks and Thomas F. Glennon.

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THE ARTIFICIAL DYESTUFF INDUSTRY

The Senate on January 26 passed the following resolution requesting the Secretary of Commerce to report on the dyestuff situation:

Resolved, That the Secretary of Commerce be, and he is hereby, directed to inform the Senate as fully as possible as to the facts relating to the supply of dyestuffs for American textile and other industries, the sources of such supply, the extent and nature of the supply, the movement of prices, the available materials for the manufacture of such supplies in this country, the possibilities, if any, as to the stoppage of such supply by reason of the existing European war, and any and all such other facts as will bring the existing conditions in the aniline color industry fully to the knowledge of the Senate.

In response to this request Secretary Redfield on February 20 submitted the following preliminary report:

Numerous American industries are closely dependent upon the use of dyestuffs. To the great textile branches they are almost as essential as their supplies of vegetable or animal fibers. The same importance exists in the case of the paint, varnish and ink trades, the paper industry, the feather and leather trades, and a group of minor industries.

Dependent upon the products of these industries are a host of other branches. All users of textiles, such as manufactures of apparel, carpets, upholstery, etc., the printing trades, automobile and carriage manufacture; in fact, nearly every phase of industrial activity into which color enters as a component factor, and this includes the great majority of our industries.

The old-time natural dyestuffs, such as indigo, madder, cochineal, orchil, fustic, and a score more, have all disappeared from any extended use by the dyer, with the exception of logwood, which still plays a valued auxiliary role. The same is the case with mineral colors, with some inconsiderable exceptions, such as Prussian blue in silks and iron buff in khaki.

Artificial dyestuffs, derived from coal-tar products, have displaced nearly all rivals, combining qualities of fastness, ease of application, brilliancy, variety of shades, etc., utterly unknown to the former generation of dyers.

The American consumption of artificial dyestuffs has attained an annual value of $15,000,000 and grows steadily.

It is supplied partly by a domestic production

valued at about $3,000,000. This apparent domestic production is based chiefly upon the use of foreign materials, half-made or nearly completed color compounds. But a small portion is made from American crude coal-tar compounds.

The great bulk of the artificial-dyestuff supply comes from Europe. The average imports are:

Germany	$7,850,000
Switzerland	910,000
Great Britain and others	370,000
Total	$9,130,000

Since August 1, 1914, in consequence of the outbreak of hostilities in Europe, this foreign supply has been interrupted and constantly threatened with nearly complete cessation. Until the present date German makers have been able to supply a considerable proportion of the normal demands of their customers, but not entirely. Some important dyes are totally unobtainable. Prices have mounted from 25 to 50 per cent. on such dyestuffs as can be delivered. The imports may cease any day through inability to make shipments on account of maritime dangers, or, what is more probable, through the military necessity of commandeering the available supply of the chief coal-tar crude material, benzol, for use as a motor fuel, or diverting the limited supply of nitric acid, the chief chemical used in color manufacture, to the manufacture of explosives.

The multitude of users of dyestuffs in the United States have been crippled in various ways, forced to change designs or abandon certain products, or to revert to a temporary use of natural dyestuffs, with all the accessory readjustment and revolution in dyeing processes. On every hand there is difficulty in meeting contract specifications and in making definite plans and agreements for the future. The importation of dyewood has quickly increased. It is now four times as great as in normal times. Prices of these dyewoods have mounted. Fustic, for example, has doubled in price.

The four American establishments making artificial dyestuffs have done their best to meet the emergency by enlarging the ordinary output. They have been crippled by the difficulties or impossibility of securing half-manufactured materials from abroad or crude materials at home. Some large consumers of dyestuffs have erected emergency plants and make the colors they absolutely need, at considerable cost, it is true.

In all this annoyance, loss, and uncertainty the question has become acute. Why do we not have an American coal-tar chemical industry, capable of meeting the Nation's demands, self-contained and independent of foreign control, utilizing our native raw material?

A careful analysis of the situation shows that not only is the American supply and the limited American production of coal-tar dyestuffs completely dominated by the German industry, but that this is the case throughout the world. Even countries such as Great Britain and France, with ample supplies of crude material and highly developed industrial power, are in the some condition as the United States, normally dependent for indispensable color materials required by their leading industrial branches, and undergoing at present much more serious difficulties than our manufacturers, as they are completely cut off from German supplies.

In 1913 the total consumption of artificial dyestuffs in the world had attained a value of over $92,000,000. Germany furnished 74 per cent. of the entire amount and over one-half of the materials needed to make the remainder. The only country, in addition to Germany, manufacturing dyestuffs in any noteworthy manner for the world's markets, is Switzerland. She relies, however, for her crude and half-manufactured materials chiefly upon German sources, and her modest industry is essentially dependent upon the colossus at her door. The dominance of Germany in the dyestuff production and commerce of the entire world is so marked, and inherently of such potential might, that it does not hesitate to make itself felt whenever and wherever an effort is made toward emancipation from its control. The methods used are those often associated with the working of great industrial corporations in various lands, and now effectively checked by legal enactment in the United States. In the case of the German coal-tar chemical industry the field is international and its operations are unchecked by law. Its influence has been felt at once in our own country when efforts to manufacture intermediate compounds or finished dyes threatened in any way the interests of the German production and trade.

The coal-tar chemical industry includes not only the manufacture of dyestuffs, but of a number of valuable medicinal preparations and of various high explosives. It is based upon the use of crude compounds present, to a small extent, in the tar obtained in the destructive distillation of coal in gas works and coke ovens. These ten crude compounds—benzol, carbolic acid, anthracene, etc.—are separated from some 145 other substances present in tar by fractional distillation. This is the work of the tar distiller. From the ten crudes nearly 300 more complex compounds, none of them dyes, are produced by highly refined and complicated chemical and mechanical processes, involving in most cases a number of complete chemical transformations. These serve as the materials for the manufacture of about 920 dyestuffs now in current use.

In the case of Germany the domestic supply of "crudes" is amply sufficient. Her color factories make all of the 300 intermediates required for her own industry and a large share of those used in the very restricted production of other lands.

The industry has been chiefly developed by the inventive power of German chemists, combined with a wealth of technical skill and keen business management, scarcely equalled in the history of any other branch of manufacture. The 21 German companies engaged in the dyestuff manufacture have a nominal capacity of over $36,700,000, on which dividends average 22 per cent. Actual profits often reach 50 per cent. The great excesses have been devoted to new construction. It is the most remunerative industry in the Empire, the one most solidly and formidably intrenched, the one of which the nation is most proud as showing the triumph of science applied to industrial purposes, and the one illustrating most strikingly the ability to win and maintain international supremacy in a given field.

In the United States, the supply of coal tar is ample, sufficient to provide in abundance all of

the crudes required for the manufacture of the dyestuffs consumed in the country. The amount of valuable by-products not yet recovered in our present coking plants amounts to $75,000,000 annually. With adequate provision to save all the benzol and tar liberated in American coke ovens, enough of the ten crudes could be secured to more than cover the world's consumption in making artificial dyestuffs.

If a commercial demand is present, American tar works can quickly provide all of the crudes needed, practically as cheaply as in Europe. In the manufacture of intermediates, the production is restricted to four or five compounds, and these cover about one-quarter of the needs of American color works.

Our manufacture of heavy chemicals is well developed, able to rapidly expand, and supply all needed chemicals for the production of intermediates and their transformation into finished dyes.

The four establishments devoted to the production of dyes supply nearly 100 different colors, largely, however, as already stated, by "assembling" nearly finished products of foreign origin. These American firms are bold and enterprising, commanding about $3,000,000 capital, evidently doing the best they can under existing conditions to build up a national industry.

Investigation shows that their advance, beyond certain limits, in the manufacture of either intermediates or finished dyes is persistently checked and prevented by the united action of German producers in underselling. The entire German color industry is so completely organized and accustomed to act as a unit in furthering the general interests at home and abroad, that little success in facing their determined opposition has heretofore been obtained.

The present crisis has evoked deep interest on the part of all concerned, tar distillers, manufacturers of chemicals, manufacturers of dyestuffs, the many users of the same, and American economists in general, as to how the problem can be settled. There is no question but that our coke interests are ready to multiply their recovery plants for the production of benzol and tar if a permanent market is assured. There is no question of the readiness of tar distillers to enlarge their plants for the production of an ample supply of the needed crudes if a continued demand is certain. American chemical works and American manufacturers of dyestuffs are ready to embark capital and experience in building up a distinctly American coal-tar chemical industry, using entirely American crudes and intermediates, provided there is adequate legislative prohibition against both "dumping" in our markets or unfair restraint of American trade by the arbitrary action of foreign monopoly permitted by foreign law and not as yet forbidden by our own. Domestic makers assert their ability to make at once over 90 per cent. of the dyes now consumed in the United States, which are now patent free, and state that the remaining tenth will soon be freed from patent restriction.

There seems to be a consensus of opinion that any rapid development and evolution of the dyestuff branch, on a scale commensurate with the Nation's needs, present and prospective, can be assured only on the basis of an effective law preventing that action toward control of our markets by a foreign monopoly which is now prohibited to a domestic monopoly. Some of the largest manufacturers have personally informed the department that what is needed is not a tariff change, but laws placing a foreign monopoly on the same basis as an American one.

American economists feel that the present crisis offers the most favorable moment to decide upon a policy with regard to this one important industry, whether it is to be firmly rooted in American soil or whether the dependence upon a foreign source is to continue indefinitely. It is pointed out that each year which elapses increases in geometrical ratio the difficulties attendant upon any attempt to create a self-contained American dyestuff industry. Further, it is claimed that it is the only highly organized industry not yet brought on a broad and generous scale within the cycle of American economic activity.

In England and France the textile and other branches have insisted that the national industries must be permanently freed from dependence upon a foreign source for one of the vital needs of the most varied manufactures. Within a fortnight the group of French chemists intrusted with the problem claimed that they have satisfactorily solved all difficulties in the way. During the same period, the necessary steps have been taken in England, where the Government has provided for the organization of a national company to create an independent dyestuff industry and contributes nearly $2,000,000 to its capital, granting at the same time $500,000 for the requisite research laboratory.

A detailed report, of which the above is a summary, will in a few days be submitted to the Senate.

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THE SILK ASSOCIATION OF AMERICA

The forty-third annual dinner of the Silk Association at the Biltmore, New York, on February 11, was one of the most successful in the history of the organization. President Charles Cheney presided. He said in part:

It is well that we come together in these trying times and see friendly faces and get a cordial hand shake and lend courage and hope to each other.

The world is in the throes of its greatest life and death struggle, and we in the Americas are among the most civilized of the nations, almost alone in maintaining a harbor of refuge for that most troubled bird, the dove of peace, and even here we can almost hear the hellish din and feel the shock and clash of arms and hear the strain and crash of contending schools of philosophy. We feel, but must stand the strain. The most interesting experiment of the world today is the United States of America. We stand as the chief exponent of the idea that government should be of the people, for the people and by the people, and if we do not succeed in defending that principle, God help the people of the world. . . .

We must decide whether difference of race, of tongue, and of opinions, are sufficient cause for

organized murder; whether that regime shall rule, or whether we shall decide to live in a confederation of civilization. That problem is a tremendous one, but the needs of civilization, and the conscience of the nations must compel them to find a solution of the problem, and so only can we live in peace.

We will continue to make a go of the upbuilding of the American idea of liberty and unity of the true spirit of justice and of brotherhood, as it was conceived by that great human man toward whom all of our thoughts are turned at this time, Abraham Lincoln!

Former Attorney General Griggs discussed the political situation as affecting business. He said in part:

The attitude of the governing class of this country, as government now exists, is hostile to industry and to enterprise that is profitable. The animosity that is most easily excited in a political convention or on the floors of Congress is animosity against that portion of this prosperity most abounds, and where wealth is most concentrated. "Wall Street" to the mind of the member of Congress from the South and Southwest typifies what was long ago called the enemy's country, and although you gentlemen are not in Wall Street, the definiteness of ideas of the gentlemen from the South and Southwest, who control the government, attaches you to it, and the great enterprising, manufacturing section of this country that is centered in the middle West and in the Middle States and New England, is regarded as something that is a menace to the welfare of the country, in the eyes of the class of statesmen that now control our legislation at Washington.

When they were about to frame a tariff that was to reduce the high cost of living, they did not want any facts from the gentlemen that possessed knowledge on the subject. They first abolished the tariff commission, which had been constituted for the purpose of ascertaining facts as a basis for tariff legislation, and assuming that they knew a priori, as we used to say in logic, everything that was necessary to know, because they had theories about it, they denounced business men that asked to be heard on questions of the most vital importance to them in the framing of the tariff law as "lobbyists."

What do they call in the ordinary language of the stump the class of people that is represented here tonight? They call them, with an offensive meaning, the "Interests." The fact that you have an interest and a stake, personally, in legislation, makes it improper, according to this modern idea, for you to convey to a legislator or a president your interest in what is being done and your desire that you shall not be unjustly treated.

I think it was two years ago, or perhaps it was only last year, that Senator Spooner spoke here calling to your attention the danger that existed in the Trade Commission bill that was being then agitated in Congress. That bill is a law today, and there is not one of you gentlemen engaged in the manufacture and sale of silk goods that is not liable to have the agent, and he will be a political agent too, of the Trade Commission bill, walk into your place of business and demand that you will bare every secret that you have.

If it were to be announced that instead of a special sessions of Congress on the fifth of March, there were to be a special election on that day, business would immediately improve. But, gentlemen, do not despair; business will improve; sooner or later the furnaces will be lighted. The smoke will float off from the chimneys, the dinner pails and the empty cupboards will be filled again; the buzz of the wheel and the hum of the spindles, and the noise of the whistle will be heard in this land of ours, with this population and the business community protected, as I believe they are, by high motives and noble purposes, not greedy and selfish as they have been depicted; these men will come into their own, and, some day, not too far off, I hope you will see the tide of prosperity flowing back like the full tide returning from the sea.

Rev. W. Warren Giles followed and paid a tribute to the character of Lincoln and Washington. Hon. Charles H. Sherrill was the next speaker, pointing out what he considered to be essential to a development of foreign trade, namely, differential freight rates to the seaboard on goods intended for export; liberty among manufacturers to combine, and the creation of a merchant marine.

The guests at the president's table were:

Henry M. Clapp, Deputy Appraiser, Port of New York; Dr. Edward Ewing Pratt, Chief of Bureau of Foreign and Domestic Commerce; James B. Reynolds, secretary, Republican National Committee; John K. Sague, Chief Appraiser, Port of New York; Takashi Nakamura, Consul General of Japan, at New York; John W. Griggs, Ex-Attorney-General of the United States; Charles Cheney, President, the Silk Association of America; Charles Hitchcock Sherrill, New York; Rev. W. Warren Giles, East Orange, N. J.; Philip J. Britt, New York; Edward H. Clift, First Vice-President, the American Protective Tariff League; Edward H. Lambert, President of the Chamber of Commerce of Paterson.

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OFFICIAL AMERICAN TEXTILE DIRECTORY—1915 EDITION

The 1915 edition of the Official American Textile Directory, compiled by the Textile World Record, is now in press and will be published early in April. Copies will be forwarded immediately on publication to those whose orders are on file and to those whose paid-in-advance combination subscription orders entitle them to receive copies.

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There were in India in 1913, 6,596,862 cotton spindles, against 4,945,783 is 1900. In that same period the looms have increased from 40,124 to 94,136.

THE WOOL GOODS MARKET

New York, Feb. 27, 1915.

The predominating feature of the wool goods market has been the purchases made by the clothing manufacturers who have been on the market from all quarters of the country. They will remain here for some time to complete their orders.

Reports from selling agents vary considerably according to the desirability of the fabrics and styles they are offering. Sellers for most of the leading popular makes state that buyers for the larger firms are placing unusually liberal orders, apparently being thoroughly convinced that, for obvious reasons, the present prices are lower than they will be later. These orders have placed many manufacturers in comfortable conditions regarding work for the ensuing few months. The smaller clothiers, who constitute by far the majority, are reported as buying more freely than usual, while many are placing small orders as has been their custom in the past. Many of them state that they prefer to pay a little more for goods, if necessary, rather than run the risk of having some goods left in stock that they cannot use to good advantage.

Additional lines of suitings in both worsteds and carded woolen goods are daily being opened, with many still to come on the market during the early part of March. Those lines, together with many others recently opened, still have their record to make and they will keep the buyers here for some time to come.

Overcoatings in many fabrics and styles have been the best selling goods and many lines are well sold for several months' production.

Fancy backs have been much sought after and many good-sized orders have been placed for them. Coverts are being ordered in moderate quantities and seem to be considered as one of the new fabrics.

The sale for mackinaws has continued during the month and is now practically over for first purchases. They have kept the lead in sales on fancy styles.

Serges have all been on the market this month and the demand for them has lacked the old-time snap. It is estimated that not more than half the formula quantities have been sold. They have been replaced to some extent by new fancy styles and fabrics which are in better demand.

Carded woolen suitings are attracting more than the usual attention. They have already figured quite extensively on buyers' order books with a large percentage of clothiers' purchases still to be made. A fine cassimere suit presents a natty appearance that is growing in favor. A better quality can be obtained in woolen than in all worsted at the same price. The greatly advanced prices made in worsted fancy suitings have benefited the cassimere fabrics.

As many cassimere mills are still fully occupied on army goods, with no lines for men's wear on the market, it is obvious that the fewer lines being offered will be benefited to a material extent.

Fancy worsted suitings which have been opened during the latter part of the month have not been shown enough to indicate the verdict of the trade. Some business has been booked and the next month will decide as to their success. Some very attractive lines are being shown and they undoubtedly will be appreciated and meet with a satisfactory sale.

Worsted and cotton manipulated fabrics in fancy suitings are being shown and, on account of the much lower prices, are sure of a liberal patronage. Some remarkably satisfactory effects have been produced which can readily be taken for all worsted goods.

Striped suitings have probably had the largest run on record for a popular style, and at last a change to plaids and checks has begun to develop and these goods are likely to grow in favor.

Prices on all kinds of worsted and woolen fabrics have caused considerable excitement and dissatisfaction among buyers who were not fortunate enough to get their orders in at the opening prices, which were from five to fifteen per cent. over those of a year ago. Manufacturers fully realize the danger of selling goods for which the stock is not first provided. The result has been that all lines

of any merit have been advanced in price from one to three or four times since they were first placed on sale. Some lines have been placed at value, while others have been withdrawn from sale until provision can be made for the requisite stock for future sales.

The fabrics that up to date have met with the most favorable results have been women's coatings, which have sold quite freely. In staple dress goods gabardines seem to be taking the lead. Broadcloths continue to be decidedly popular and are much sought after.

The buying of women's wear is only getting under way. The various corporations, making goods for the dry goods jobbing trade, opened very early, and it is reported that they have done a very satisfactory business at advancing prices.

With the increasing popularity of cloth top shoes the shoe cloth manufacture has become an important item and new machinery has been started on the fabrics. A large part of the goods have heretofore been imported. This source of supply has been largely cut off, consequently the mills adapted to making the goods have all the work they can get out.

The market has become comparatively bare of stock woolen and worsted goods, which have been sold at satisfactory prices, in many cases full prices. Some have been sold at advances over the prices at which the goods were made to sell for.

The demand for army goods is not so active as it has been, most of the contracts having been awarded. There are, however, several contracts still to be placed. With the present large demand for woolens for domestic uses, it will become more difficult to place such contracts except at advanced prices.

A summary of the exports for December shows a gain of $3,800,000 over the previous December, in exportations of clothing, blankets and other army woolens. This will furnish convincing evidence as to the extent of woolen manufacturing that has been done here for the allied armies, principally for France and England.

Other neutral countries that have obtained their uniform cloth and blankets from European sources are now beginning to look to this country for their supplies of such goods.

Abnormal conditions have decidedly stimulated the woolen business here. With the present war conditions existing abroad, the uncertainty of receiving importations from British sources, competition from abroad has been largely eliminated. Buyers for French houses have been here to purchase dress goods, but the result is not publicly known. These with the sales for domestic uses and for army supplies will give our mills all the work they can turn out for the entire season.

ESTIMATING THE COST OF WOOLEN GOODS

The merchant who acts only as a distributer of goods has no difficulty in determining the cost of his wares. The invoices tell him in plain figures the cost of his merchandise, which, undergoing no change while in his possession, is sold in the same condition as when purchased, with a certainty as to the profit or loss of any transaction.

The manufacturer on the contrary has to face a far different condition. If he is manufacturing woolen goods he must invest in raw material in the form of wool as it comes from the sheep's back in raw cotton, shoddy, waste, fuel, oil, soap, dyestuffs and chemicals, machinery, belting and other supplies. He pays out large sums for labor and in return for this outlay finds in his possession a stock of manufactured woolens of various grades and market values. No clue as to their cost per yard can be obtained from the payroll, or invoices of material and supplies. What the goods cost per yard, how much for raw material, for labor, and for all other expenses are questions that must be met, and upon the accuracy of the answer depends the success or failure of the business. If the manufacturer relies on guesswork or on inaccurate methods of estimating, he may be selling his goods at a loss or holding them at a figure so high as to prohibit their sale. He will then occupy the position of a mer-

chant who ignores the cost in fixing the selling price of his goods. The ultimate result of a business so conducted cannot be a matter of doubt.

It is of the utmost importance to every manufacturer, not only to estimate closely the cost of his own goods, but that all his competitors should be able to do the same, for the manufacturer who sells goods in ignorance of their cost not only ruins himself but spreads demoralization in the trade and causes loss to all other manufacturers in the same line.

The requirements in estimating cost vary with every mill, and in order to make this article of value to the greatest number, we will confine it as far as possible to a statement of general principles, leaving to each mill owner the work of applying them to his particular needs.

COST OF RAW MATERIAL

The cost of the material per yard can be more readily determined than the cost of labor and expense, as only three factors are to be reckoned with in the cost of the stock, viz.: cost of raw material per pound, percentage of shrinkage in manufacture, and the value of the waste products. The fluctuations in the amount of the mill's production do not affect the cost of the raw material.

It is necessary to compile statistics of mill work to show the product obtained from material supplied to each department of the mill, such as the various quantities of each sort obtained from the wool purchased, weight of scoured or colored stock from materials supplied to scouring and dyehouse, the yarn obtained from picked stock and the quantity of finished cloth produced from goods as they come from the looms. From such records the cost of the raw material in any one of our fabrics is readily calculated.

COST OF MANUFACTURING

In a mill making but one fabric the labor and expense per yard can be found by dividing the total amount of payroll and expense charges for any given period by the number of yards manufacturing during that time. Such a calculation, however, in a mill making two or more fabrics would leave the cost of each fabric unknown. The great variety of goods, varying in quality, weight, size of yarn, number of threads per inch and in finish made in the same mill complicates the calculation of the cost of manufacturing each fabric. A mill may have several classes of goods in process at one time, some requiring careful sorting of the raw material, while others are made from stock as it is received; some stock dyed, others piece dyed. Under such conditions a system must be adopted that will fairly apportion the expense among the different grades of goods.

To do this we must first determine the cost of each process. This can be done only from the records of each department, carefully collected during a period of at least six months, when the department was operated at its full capacity. These statistics are the basis of our calculations. They not only furnish us with the facts on which to base the cost of each of the fabrics, but also with a clear statement of the work in different departments of the mill.

(To be continued.)

BUILDING CONSTRUCTION COSTS

By W. W. CROSBY, M. E., Boston, Mass.

The slogan "Build Now" has called forth the opinions of many who have quoted figures showing on paper that the cost of construction is now at an exceptionally low point. A comparison of prices recently received for new work with prices for simliar work of various ages, shows a slightly lower cost for the new work. In actual figures, this is apparently from 3 to 5 per cent.

Building materials themselves, while low, are not exceptionally so, and buyers have the feeling that with increased inquiries and takings, the prices are likely to soar with but little warning. In other words, the quietness of business has brought about the reduction in prices of materials.

The cost of labor is no less, in fact it is rather high and likely to go higher even in spite of the large numbers of the unemployed. Several contractors have remarked that there might be some advantage in the labor situation in that the better men could be picked and thereby get better and more

work in a day than when labor is scarce and all kinds of men have to be put up with.

When we speak of the cost of building materials, we must not forget that bricks, steel, planks, cement, etc., are not ultimate raw materials. In a sense they are so far as a building is concerned, but they in turn must be manufactured and all carry a considerable labor cost. Clay must be raised from the pits, ground, mixed formed, stocked and burned; a power plant must be maintained and trestles and conveyors operated.

In the case of the steel, the ore must be mined, of itself accomplished by a large organization, with power plant, drilling, blasting, hoisting, and conveying, merely to put the material on the surface of the earth. Then must come all the processes of ore reduction, through the assistance of the blast furnaces, then the refining processes, resulting in the iron or steel being rolled into bars, I-beams, etc. Nor is this all; the bars for reinforcement need but little further attention other than cutting to length and forming, but the structural shapes must be fabricated.

Nowadays we have cement made from a by-product of the steel mills, so we are partly killing two birds with one stone. But the cement mills require much equipment and organization to effect the proper calcination and grinding.

Southern pine lumber, long leaf is becoming scarcer all the time, but even so, it must be logged, sawed and dressed. Second-class buildings constructed with Southern pine timbers and planks, long regarded with great favor on account of the low cost of construction coupled with slow burning qualities, are giving some uneasiness since many timbers are found, after a term of years, to be losing their strength due to a fungus growth. This is having an influence on costs in that steel and cement have to be used instead.

Transportation is another important factor, particularly now that rate increases are in vogue. It is to be regretted that while so much is being said, done and legislated regarding railroads, that instead of looking to raising rates as the solution of saving the roads, some of the large leaks be stopped. Of these the matter of parallel lines serving identical territories may be mentioned. There are many situations where such conditions occur within the control of a single railroad.

The amount of labor entering into construction, proximate and ultimate, is very large, as has just been seen. The cost of labor is always on the rise, both in the matter of per diem wages and number of hours worked per week. Against this is the invention of labor saving devices and processes where by-products are used. For instance, location of blast furnaces near coal fields, adjacent locations of cement, and rolling mills. This is approaching the large combinations of capital which just now are looked on with so much disfavor by the Government. There is always the "restraint of trade" danger, but unless intelligently done makes for higher costs of building materials.

So far as invention of new processes is concerned, it will be something exceedingly radical to effect any large reduction in cost of building materials and the chances are much against such a situation. The tendency is rather toward absorbing any reductions effected in manufacturing, for some time to come.

Building laws are becoming more and more involved and the cost of the main building is continually raised by considerations of the safety and health of the occupants.

There is no doubt that prices are lower now than they have been. There has been so little business that undoubtedly the competition is sharp enough to induce bidders to add smaller amounts for profit. So it would seem that if one has possible need for space it is well to go ahead, but as in many other cases to secure any real advantage it is a case of "Do it first," for by waiting everybody will be doing it and the advantageous prices will have disappeared.

The world's flax crop for 1911 was grown on over 4 1/2 million acres which produced over 800,000 tons. In 1912 Russia alone had 3,832,056 acres under cultivation, which produced 817,871 tons, and out of this she exported 345,215 tons.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

INTERNATIONAL CLASSIFICATION OF RAW SILKS BY ITS DEFECTS

BY WARREN P. SEEM

Winner of the First Prize Awarded by the Silk Association of America

(Continued from February.)

Select 20 skeins from 20 different books of the bale.

Soak properly, and then dry until the silk is in good working condition; rub out gums, if any, skein up 10 skeins regular and turn the remaining 10 skeins with the under side up so as to get the average condition of the skeins.

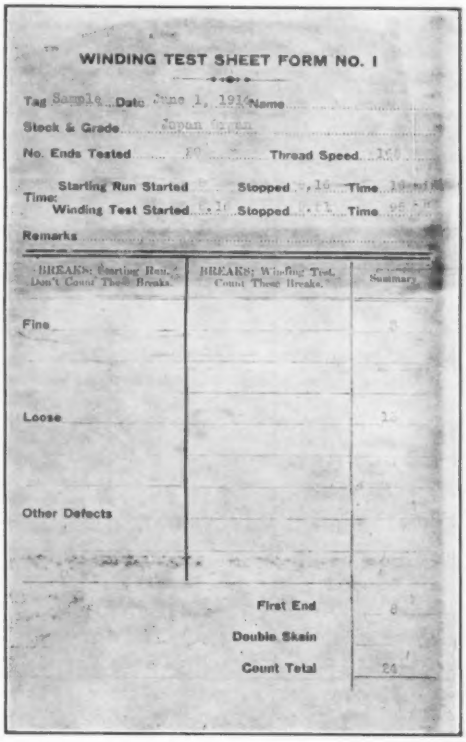
Find end and wrap on bobbin, then run about 1/4 minute; when the 20 ends are all ready time test sheet and start out bobbins as close together as possible; wind starting run, running 16 minutes; mark down all the breaks in the proper column but keep them separate from the actual winding test. Run the actual winding test 93 minutes longer, marking down all breaks in the proper column. (See test sheet No. 1.) Tie the winding knots about 1/2 inch long so as to be able to readily distinguish them in the quality test.

Winding Count

The sum of all breaks for the last 93 minutes equals the breaks on 300,000 yards; to this add 8 for single skeins and 24 for double skeins, the sum of which equals the winding count. (See test sheet No. 1.) The 8 breaks are added on the single skein and 16 additional on the double skein for the excessive breaks when first skein runs off and second skein starts out, to make it true with that on whole skein tests and also hold out with waste and cost estimates.

For Tussah and Short Length Skeins

For regular winding and test use as close to 167 average thread speed as can be run with frame and bobbins used, without weights. Wind 20 skeins until three skeins run bare, when stop test. Time from start to finish. Multiply this time by the number of spindles run (20) and divide this result into the total breaks plus 20 for the first end tied up. This result is the breaks per spindle hour which times the following table



WINDING TEST SHEET FORM NO. 1

Tag Sample Date June 1, 191 Name

Stock & Grade Japan

No. Ends Tested Thread Speed

Starting Run Started Stopped Time

Winding Test Started Stopped Time

Remarks

	BREAKS: Starting Run. Don't Count These Breaks.	BREAKS: Winding Test. Count These Breaks.	Summary
Fine			
Loose			
Other Defects			
		First End	
		Double Skein	
		Count Total	

gives the breaks per 300,000 yards: (4 per cent. allowed for slip and loss in tieing up.)

169	average	thread	speed	times	30.7
166	"	"	"	"	31.8
164	"	"	"	"	31.70

(See test sheet No. 2.)

(Note.—The winding and cleanness test cannot be made with one operation for the following reasons:

First: It is impossible to get a true winding and cleanness test at the same time.

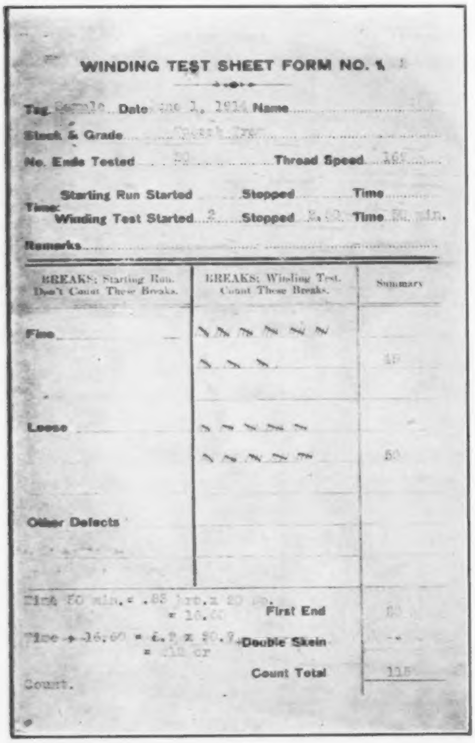
Second: The winding is the most expensive operation in throwing, and the value of

silk may be reduced a grade by excessive labor cost and waste.)

Quality Test

Method of Making

Take 10 bobbins from the winding test (using every other one) and redraw them


WINDING TEST SHEET FORM NO. 1

Tag Sample Date June 1, 1914 Name

Stock & Grade

No. Ends Tested Thread Speed

Time: Starting Run Started Stopped Time

Winding Test Started 2 Stopped Time

Remarks

BREAKS: Starting Run. Don't Count These Breaks.	BREAKS: Winding Test. Count These Breaks.	Summary
Fine		
Loose		
Other Defects		
	First End	
	Double Skein	
	Count Total	

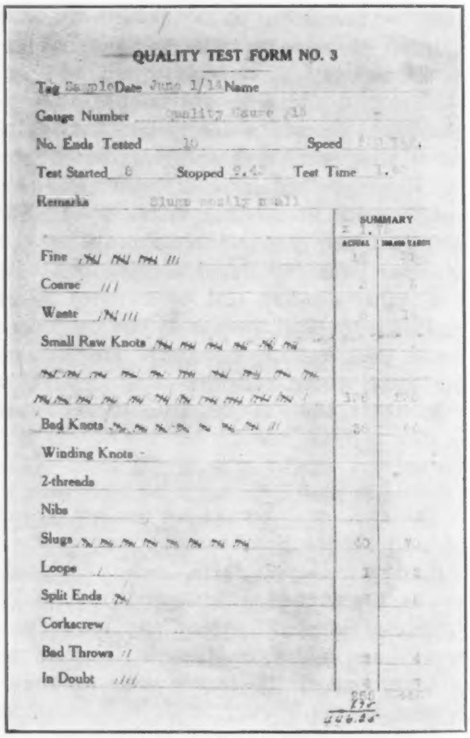
Count.

bare through the cleaning apparatus at 250 thread speed. Use a double head wool spindle 1 1/4 inch diameter or a single head iron spindle 1 1/4 inch diameter. (This to make the tension such that a thread of 7 deniers coarser than size tested will stop the take up bobbin or break down.) Note starting and stopping time. The gauges are marked in deniers and the average size is to be used. That is on a 13/15 denier silk, shift the cleaners so that the thread runs through at No. 14. Mark down all defects as found; if two or more defects are on the thread you are tieing, mark down all of them. (See test sheet No. 3.)

Do not wait until there are several ends tied up before marking down the defects, but mark them down at once so as to be accurate. It is unnecessary to examine the waste made in piecing up for defects. (Only 10 bobbins are used in cleaning so as to make the testing time nearly uniform. A series of tests on 10 bobbins only showed a maximum variation of 2 per cent.

It is unnecessary to keep every end running during this test as the length is determined in the winding. This gives the operator more time to examine the defects and note the same correctly.

It is very important that the thread run


QUALITY TEST FORM NO. 3

Tag Sample Date June 1/14 Name

Gauge Number Quality Gauge

No. Ends Tested 10 Speed

Test Started Stopped Test Time

Remarks Slugs mostly small

	SUMMARY	
	Actual	
Fine		
Coarse		
Waste		
Small Raw Knots		
Bad Knots		
Winding Knots		
2-threads		
Nibs		
Slugs		
Loops		
Split Ends		
Corkscrew		
Bad Throws		
In Doubt		

exactly at the proper size and this must be watched every time an end is tied up. If the gauges become choked up with waste, clean them out with a No. .0015 feeler. Don't force a larger size feeler in as it will scratch the cleaner. Keep the gauges covered and well oiled with clock or light spindle oil when not in use.

Computation

Sum up all the defects and multiply by 1.75 which gives the result on 300,000 yards. (10 bobbins contain 172,350 yards, this times 1.75 gives 301,612 yards or slightly over 300,000. On account of variation in speeds and time lost in piecing up this is about as close as can be calculated. The winding time is regulated on various speeds to give this yardage as close as possible.)

Cantons

On Canton silks make the cleaning test on 5 bobbins. Use the coarsest size instead of the average as on Japans, Chinas and Italians, that is, on a 14/16 denier use No. 16 gauge.

The actual breaks multiplied by 3.50 gives the result on 300,000 yards.

(It has been found in these tests that as the number of defects increases, the results are true on a smaller number of samples, as the defects get closer together on the thread and the result follows as a natural sequence.)

The coarsest size is used, as manufacturers using Cantons expect many defects so that by using the larger gauge the smallest ones are allowed to pass, at the same time not destroying the relation with better grades of silk.

After a series of tests conducted after essay was submitted I find that 20 samples reeled 3000 yards each, total 60,000 yards, gives practically the same result as the 10 samples, 17,235 yards. Canton, 20 samples 2000 yards, total 40,000 yards. This method shortens the time of testing.

(To be continued.)

THE SOUTHERN NEW ENGLAND TEXTILE CLUB

A very successful meeting of this club was held at the Narragansett Hotel, Providence, on February 27. President Dexter presided and in his address spoke of the burden of legislation that business interests were forced to bear. Hon. Curtis Guild was the principal speaker, and gave an interesting account of Russia and the possibilities of trade with that country. The April meeting of the club will be held at the Hotel Bancroft, Worcester, on April 24 instead of 17, as first announced.

ENGLISH NOTES

By Our Regular Correspondent

In round terms about one-tenth of the flax used in the linen industries of this country is Irish-grown. Of the remainder, towards 80 per cent. comes from Russia and toward 20 per cent. from Belgium. The statement leaves out of account the minor sources of supply and ignores the variations which occur from year to year. The Belgium flax has of course fallen into German hands and the Russian supply is materially less accessible than usual. Arrivals come to hand in small quantity from Russia. Purchases of flax are being made in that country by British and Irish spinners and there is some reason for saying that the British and Russian Governments are in the act of facilitating larger deliveries. On the whole, however, the linen trade may be called the most disturbed of textile industries from the point of view of raw supply. Deliveries of jute were disturbed while the "Emden" was at large. Wool deliveries were under the threat of disturbance and silk for one period was not shipped from the East, but the troubles of importation are vanishing.

The general export of textile manufactures suffers from the worldwide dislocation of finance and from the prohibitions placed on the shipment of certain articles. Compared with a year ago shipments in January are some 49 per cent. less by value in cotton yarn and pieces, 48 per cent. less in woolen fabrics, 34 per cent. less in worsted and stuffs, 34 per cent. less in linen piece goods and 52 per cent. in woven jute. Taking one line with another the export may be said to have been approximately one-half, a fact that would mean great suffering were it not for counter movements. As affairs stand, the secretary of the Cotton Operatives' Association was able recently to declare that of 25 million spindles out of work in the third week of August only two million were now at a stand. Cotton has been the worst-placed of textile industries hitherto and cotton looms are less employed still than spindles. The disparity is to be explained perhaps by the enlarged use of folded yarn in place of singles. In the cotton departments employ-

ing male labor, enlistment has brought about a real shortage of hands.

Where a year ago worsted and woolen yarn worth $24,000,000 was exported, the total for January was $415,000, but the only troubles of the producers are that they have too much work and too much difficulty in getting wool from the ship to the mill. The contractors for army cloths are now full until December and one of the largest makers of heavy woolens admitted lately in public that, so far as it has gone, the present war has done as much for the heavy woolen mills as the Franco-Prussian war. Wars are the milestones of the Dewsbury and Bathy firms. The Crimean in the fifties, the American Civil War in the sixties, the Franco-Prussians in the seventies, and the Japanese and Boer Wars in the nineties are the landmarks seen in retrospect. It is perhaps not a good omen that two, at any rate, of the largest carded woolen firms are extending the size of their mills.

* * *

The proposals put forward by the Government for the creation of a large dyewares company have found their best friends among those to whom bills for dyestuff are comparatively unimportant; in other words, textile manufacturers operating their own dyehouses. They have more free money for the purchase of stock in the company than have the majority of commission dyers and a few cents on color hardly amounts to an element in the total cost of their goods. To the commission dyer cost of color ranks next in importance after the costs of labor and steam, and to the small man five per cent. on color means perhaps his salary for the year. Commission dyers as a whole have vigorously rejected provisions that would shut them off from any lower-priced dyewares than those of the State-assisted company. They have protested against the creation of anything like a monopoly and their reasons for this may have another explanation than price. Dyers have been accustomed to easy credit conditions and it does not appear credible that a central concern would allow them the extra months they have claimed freely from the competing supplies. They have shown themselves especially anxious to hold open the door to the Swiss colormakers and the large Bradford Dyers' Association—for one—has expressed its decided preference for grants-in-aid of individual and competitive concerns.

These recommendations from the trade have not been accepted bodily, but the original scheme has been modified. A company with $10,000,000 is proposed, the capital to be subscribed in equal portions by the Government and the trade and public. The Government money is to be repayable nominally in 25 years and to carry four per cent. interest, payable only out of net profits. During the first five years the Government interest is not to be cumulative and so long as any part of the loan remains unpaid the dividends to stockholders are to be limited to six per cent. Thus the Government is willing to forgo interest up to $1,000,000 in case of need and to spend besides any sum up to a total $500,000 on experimental and laboratory work spread over a period of ten years.

The great bulk of dyeing and printing in this country is done by commission firms who have been supplied with dyes principally from Germany at specially low prices with condition in the terms of sale forbidding the re-sale of the color out of the United Kingdom. In part their work is independent of strictly textile operations and capable to some extent of transference abroad. Thus goods made here can be and are shipped gray to be dyed in other countries. Certain orders would not come to British manufacturers at all unless they could give shades of a specified fastness at a limit of prices. The fact that so much work is held on condition of beating the native dyer or the Dutch, German or American dyer in one respect or another tells against any proposals having the effect of making dyestuffs dearer.

In the present restricted conditions dyers are having to make the most of such materials as they can get. Dyers tell of sending orders for so many hundred pounds, accompanied by cash and of getting deliveries ten pounds at a time. Customers complain,

of course, that in disclaiming responsibility for shades and permanences dyers are abusing their position, but it is probably still the case that some dyers average better results than others. An active little market is being run in job and odd lots of color, some of them years old and out of date. Not a week passes without the offer of parcels of from one ton down to a few pounds of color to which same more or less authentic name has been fitted. The quantity of these derelict lots exceeds any expectations that could have been found about them and some are sold that would be long in finding a buyer in ordinary times.

* * *

Before an improvement set in in the demand for cotton goods, the dyewares for cotton were abundant relatively to those for wool. Cotton colors are relatively cheap and if they can be made to serve for wool there is an advantage in price, even allowing for the incomplete exhaustion of the bath. The prospect of using the sulphur colors for wool looked more attractive a few months ago than this form of substitution has since become, although the method remains valuable enough to use. Union wool and cotton goods are being dyed in some quantity in a single bath with sulphur colors and with results which are passable even without chroming. The bath has to be alkaline, but in some experiences it has been found that a solution just over the neutral will do. The trouble is to tell when the bath has ceased to be alkaline enough, as of course the dye interferes with the ordinary litmus test. It is apparently not impossible to deduce the needs of the case from experience.

The Lodge-Evans process for dyeing the animal fiber with sulphur dyestuffs is being used by a number of firms who pay a small royalty to the inventors. It has the attendant disadvantage of being impracticable in copper vessels, but no serious fault is found with the results obtained. The publication of their English patent shows that they reduce the color to its leuco-compound by the use of alkaline sulphite. The instance is given of a solution suitable for dyeing union fabrics without detriment to the wool.

2 parts sulphur dyestuff
2 parts sodium sulphate
1 part hydrosulphite of soda
100 parts water
Add a little alkali to ensure non-acidity

It is stated on competent authority that for this process the inventors refused a firm offer of $50,000. Another method patented by McRhys-Davies of Bradford is in the field.

* * *

Information from Sweden says that the German authorities are buying from that country a heavily milled cloth of 25 ounces weight made from shoddy, with 30 per cent. of cotton. The goods are to be used, it is understood, by the Landwehr and the price of $1.38 per yard is high enough to suggest that they are urgently wanted. Cotton warp, woolen-filled cloth is being bought from the same country by Germany, to make army underwear, the export of knit garments having been prohibited.

It is rather in civil life that cotton is encroaching upon wool in England. The cotton blanket is quite unusually prominent, wool blankets being not only high in price, but difficult of delivery. The better grades of flannelette have been substituted extensively for flannels, of which the production is consumed almost entirely by the military. Cotton warp woolens do not command the confidence of the British army authorities, although there is considerable reason to think that heavy cotton warp meltons would have made more satisfactory overcoats than some of the spongy fabrics that were bought as emergency clothing for men in training. The officials do not seem to have been convinced entirely that cotton cards and fustians would make a good winter substitute for wool khaki for military trousers. However, the war office refuses the voluntary home defence corps liberty to wear woolen uniforms and prescribes for them a greenish cotton drill.

Retail drapers are taking it as their duty to steer public demand away from wool to

coton and are considering collective measures having that object. They are able to argue that where the cotton mills need work the woolen mills have too much work and that consequently a diversion of business is a philanthropic measure. They have the idea also of assisting silk and lace at the expense of wool and one of their spokesmen has aspired in public to re-establish the vanished trade in mixed cotton and silk knit underclothing. Upon their own merits, fancy cottons of the sponge-cloth and terry cloth classes in tasteful shades have during the last two seasons diverted the dress goods trade away from wool, the most successful novelties being the French. Probably the English wool dress goods makers have more to gain from the temporary cessation of shipments of French wool and fancy cotton fabrics than to lose from any measures that retailers might concert.

On the subject of French trade and the amount of damage done by the German occupation of Northern France there appears to have been at least a misconception. A German semi-official statement saying that raw materials and goods to the value of $200,000,000 had been seized in Roubaix, Tourcoing and Lille had been read in some quarters to apply only to wool or textiles. The annual value of Roubaix wool manufactures being about $100,000,000, the validity of this estimate calls for no comment. Skins, leather and metals are included.

It is notable that the Indian Government has given to its district officers advice to encourage the restriction of the cotton crop of 1915. After considering a scheme for holding up the price of raw cotton to a fixed minimum the proposal was rejected on the grounds that utimate success must be most uncertain, that the commitments would be indefinite and dangerously large, that such help could not be given to one industry and not to another and that the Government had not the means. The Government is, however, going to stand behind the banks. By depositing paper currency the large banks can obtain terminal loans and they are to lend to the district banks who are to lend to the holders of cotton. The arrangement amounts to a promise that the cultivator shall not be stranded. The normal mechanism of the market is retained in work under the customary safeguards. As to making paper currency the basis of credit, about which expedient there may be legitimate doubts, it has to be observed that the notes are issued against a reserve and that a Commission on currency advised this identical step before the war was in question. The hope of the government in that the promise will suffice and the knowledge that facilities exist will obviate the need for recourse to them.

* * *

In all the larger classes of textiles exported during January to the United States there are considerable decreases as against twelve months ago. There is another light in which the results may be regarded. Are the January, 1915, totals less than those of December, 1914. In some important instances such is the case. For example

		Dec. 1914	Jan. 1915
Cotton piece goods ..	yds.	4,900,600	4,210,400
Mixed silk broadstuffs	yds.	135,852	89,450
Linen yarn	lbs.	232,000	201,600
Linen piece goods ..	yds.	8,139,700	7,413,900

The contrary applies in these other instances.

		Dec.	Jan.
Worsted yarn	lbs.	Nil	132,200
Woolen tissues	yds.	302,000	485,500
Worsted and stuffs ..	yds.	1,726,700	3,277,600

Basing comparison on the earlier month business in wool goods is seen to be getting larger instead of smaller. In favor of this kind of reckoning it can be said that since the war began men have been more disposed to compare one month with the last than to go back twelve months. The table succeeding gives the contrast between January, 1914: January, 1915:

Exports U. K. to U. S.
(Month of January)

		1914	1915
Cotton yarn	lbs.	607,400	381,900
Cotton piece goods	yds.	7,541,500	4,210,400
Worsted yarn	lbs.	107,800	132,200
Woolen tissues	yds.	982,000	485,500
Worsted tissues and stuffs	yds.	4,220,200	3,277,600
Carpets and rugs	sq. yds.	26,200	46,400
Spun silk yarn	lbs.	66,764	47,829
All-silk broadstuffs	yds.	38,901	16,837
Mixed silk broadstuffs ..	yds.	226,248	89,450
Linen yarn	lbs.	317,500	201,600
Linen piece goods	yds.	13,547,600	7,413,900
Jute yarn	lbs.	306,300	Nil
Jute piece goods	yds.	8,345,000	3,045,200

SCIENTIST VERSUS MANUFACTURER

(From the Textile Mercury)

The current controversies about dyestuff manufacture have done something to revive the antagonisms expressed by scientific against commercial men. Chemists of varying degrees of eminence have asserted their unalterable conviction that the technical problems in this admittedly knotty case are beyond the merely commercial man, and call for something higher than the commercial mind. Unless the affair is delivered over lock, stock, and barrel to the scientists they have no hopes of it. The distrust has wider applications, and as it is to some extent mutual the air may possibly be cleared by a few remarks. Who are the business men whose capacity to appreciate scientific questions is mistrusted or denied? The answer is: All of them, with barely an exception. It becomes necessary to ask what the commercial men are, and only one definition fits the whole number of cases. They are men who have shown a more or less marked capacity for making a commercial success of their affairs, and who have thus been led or encouraged into that not unremunerative direction. Others than themselves may possess a like capacity; but judgment goes by proofs, and especially in a connection in which the incentive to give practical demonstration of one's ability is all but irresistible.

Who, then, are the scientists, technologists, or others who question the ability of the commercial mind to grasp a complicated point? In general, they are men of a high order of intelligence and of superior education who yet have not as their most marked feature the instinct and ability to make a commercial success of affairs. They may leave the business man leagues behind them in bewilderment in the laboratory or the lecture room, but their prowess in their own province—the market-place—is untested and unknown. They might beat him at a bargain, at the swift conception or execution of a plan, or the steady laying of brick to brick which results in the end in the completion of a great commercial edifice. All that is known is that they have not demonstrated their capacity to do so, although they have had the opportunity if they cared to take or make it.

Of course the commercial class is not a privileged one: it owes its position to "The good old rule, the simple plan, That he shall take who has the power, And he shall keep who can." If the scientist class, with the advantages it possesses over the simple manufacturer, has been unable to oust him from the practical control of affairs, that can only be because in some essential respect the men of learning are lacking. Men of originality and ingenuity they may be, but until they have won their spurs upon the field they are not allowed to pass as men of action.

On the whole it would not appear that contempt for commercial ability is any better bestowed than contempt for scientific ability. It ill becomes the blade to fall out with the handle or dispute its utility in a knife of practical account. Although it is the fashion for persons on the scientific side of industry to gird against those on the commercial side, and to accuse them of failure, there is probably just as much to be said from the other point of view. The fault is their own if the scientists do not hold the reins. The obligation to understand the others is greatest on those in commercial charge, because that is complete charge, but the incentive to occupy the place of power is the same for each.

Were those on the commercial side to take their cue from the persons who are ranged against them they would read the scientists a pretty lecture for their disregard of practical necessities and their refusal to come down to the earth. The obvious retort to those who say that manufacturers must become scientists is that equally must scientists become manufacturers—at least in their ability to organize and control affairs. If manufacturers refrain from that course, it is perhaps because of their perception of the incompatible; because they know that only a manager can fill a manager's place; and that when the men of learning and science have expended all their strength upon the solution of a problem it will still devolve upon somebody else to turn that solution to account. They have nothing but admiration

for the rare individuals who are fully competent in both directions, but they never expect that number to be very large. It is their effort not to make the mistake of underrating technical and theoretical mastery, and they would be all the more patient towards scientific advisers who did not assume gratuitously that devotion to business instead of to science denoted an inferior mind.

WOOL AND THE BRITISH EMPIRE

By Our English Correspondent

The war has brought into sharp prominence the dependence of the manufacturing nations upon the British Empire for their wool. Whether or not that dependence is more absolute than in the past, several causes have conspired to make it more evident. First, of course, was the entry of that Empire into a state of war in August. The immediate outcome was the refusal of supplies to Germany, which country imports about seventeen times as much wool as it grows, and to Austria. In early October it became necessary to refuse supplies to all European countries, other than Russia, Belgium, France, Spain and Portugal, and in mid-October the prohibition was extended to all non-British destinations. At the same time a similar regulation went into force in the British colonies, the result being that only residents on British soil could possess themselves of British wool.

The circumtances which made this action felt peculiarly in the neutral countries are easily seen. It is plain from the evidence of prices that all good wools have been scarce in relation to the demand. Irrespective of its origin, wool has been keenly sought after and dearly paid for in recent years. No large reserves have been carried over from season to season, for in these times wool is manufactured with about the same regularity as it is grown. Consumers look for continuity in all their supplies, but some wools they want more than others. Quantity and quality go hand in hand in determining the desirability of produce and it is apparent that in the chief wools of the British Empire a great many manufacturers have found the features that they want and, hitherto, have been able to obtain suitably large lots to our standard of quality. The very virtues of the materials aggravate the hardships of the case.

The trouble is accentuated also by the accident of time. One season's clip had practically been disposed of when the war broke out and all calculations and arrangements were based on the expectation of the arrival of the next. Quantities of new antipodean wool should have been in the markets of the northern hemisphere now. By March fully two-thirds of the quantity should have been in the mills or warehouses of the manufacturing countries. It is certain, however, that the arrival of the new clip from oversea will be delayed. Transport is all deranged by the withdrawal of German sailings and the conversion of scores of British liners into troopships. The risks of navigation have been multiplied and it is not at all impossible that a few cargoes of wool will be lost in transit. This risk has been decreased by the capture of certain commerce-destroyers, but others are at large, hunting for vessels carrying an enemy's flag. Delays and uncertainties are the portion of neutrals as well as of belligerents in any world-wide war and the upset is liable to be intensified at any time by the action of the combatants; as in this case it has been by the decision of the British Government.

Two excuses for the official action can be found. The British Government does not intend that its foes shall be assisted to keep the field by the help of British wool. The intention is displayed in the first of the two proclamations to which reference has been made, refusing supplies to the neutrals nearest to German soil. The second excuse resides in the necessity for preserving for the use of the allied forces a sufficiency of clothing material. If there were an abundance of wool in England and the certainty of receiving more as required, the business of thwarting the enemy could doubtless be arranged by certificate. But the pressure has come at the tail of the season and the perils

of running out of wool have seemed sufficient to justify measures of conservation.

It is true that a large part of British trade has been cut off by the war. There is no more German buying of colonial wools out of the London warehouses. German drawings upon the English clip are at an end and so is the normal export of manufactures to the German market. The yearly 20 million pounds of tops, over 40 millions of crossbred, English, mohair and alpaca worsted yarn as well as the 7 1/2 million yards of cloth invoiced at an average of $1.20 per yard, is done with. Trade has suffered also in other directions from the war and much less than the usual weight of wool would satisfy English industrial demands were there no war stores to furnish.

It is to be inferred from the available figures that the quantity of wool in stock in Great Britain has been less this fall than usual. The shortage of merino has been apparent throughout the season and crossbreds have maintained a level of price which suggests anything but a large surplus upon hand. No figures to illustrate the precise position at the critical moment are available, but something can be judged from the statistical returns. The net effect of all import and export transactions in raw wool between January 1 and September 30 was to reveal a supply of 278 million pounds of wools available within the country for British industry. This result has to be compared with the 428 millions (1913) and the 351 millions (1912).

Although the normal trade in goods has been impaired, perhaps to the extent of one-half, a furious demand has sprung up for army clothing. Of British khaki the current production is some 440,000 yards (or 250 miles) per week, some of it woolen, some worsted and some mixed worsted and woolen. It is 6/4 cloth of various weights, 21 oz. and over, made from sliped, scoured or light-shrinking crossbred and English wool and it cannot be extravagant to allot one million pounds of wool weekly to that article alone. Then there are the large but undefined quantities of French military blue and of Russian khaki, the great demand for coarse knitting yarns, besides the blankets and flannels in which worsted noils may be used. The total demand is at any rate large enough to employ on doubled, or extra, hours all the combs, cards, spindles and looms suitable for the purpose. About 5 million pounds of tops a week, over 5 million of woolen yarn and towards 4 million of worsted yarn was the estimated production of British machinery in 1907.

At the present time overwork in some directions is flanked with underwork in others, but in view of the weight of the goods made for the armies it cannot be suggested that the consumption of wool is less on the whole than the normal, while of crossbreds the offtake is unmistakably larger than usual.

The decision to prohibit exports to all other than British destinations came as a surprise and—to some parties—as a highly unwelcome one. A deputation from Bradford waited upon the Government to express a protest and one topmaker sought in vain to convince the authorities that their decision went beyond the needs of the case. That opinion was not held generally in the trade and in point of fact nothing came of the representations. A further deputation which wished to know, for business purposes, the earliest date at which the prohibition might be withdrawn was assured that the rule would hold good until December 31 at least. The Huddersfield Chamber of Commerce in some later negotiations has assented in principle to an extension until January 31. Events will doubtless determine the course to be taken after the date last-named and the possibility of a further prolongation cannot be ignored. The military authorities have the mills under contract up to March and May so that nothing but large arrivals of new wool can be expected to influence the Board of Trade to permit export to America.

It thus appears that for some time yet manufacturers in neutral countries are destined to feel their dependence upon the British Empire. Reasons have already been given to show that the importance of British supplies is not to be measured by quantitative considerations alone. It may, however, be worth while to estimate the propor-

tion that the British Imperial wools bear to the whole. The authorities are in general agreement in estimating the world's production of good, bad and indifferent wool at, or about, 3,000,000,000 pounds per annum. The calculation includes wools of all qualities and of all degrees of shrinkage. It embodies those which are used at the source of production with such as are sent to Europe and America, and on these accounts its interest is more nominal than actual. The weight of the clip in all countries varies more or less from year to year and in any such overhead estimating there is plentiful scope for guesswork. In the following table showing the supplies from the principal British sources the Indian quota is set down under reserve as 65 million pounds:

British Wools

Australasia	lb	863,489,000
Cape		157,761,000
British North America		11,000,000
Falkland Island		5,000,000
United Kingdom		125,000,000
India		65,000,000
Total	lb	1,227,250,000

The British quota would thus appear as 40 per cent. Practical purposes are better served by confining the outlook to those wools which are imported into Europe and North America and thus form the external supplies to which more or less every manufacturer has to look. The most convenient tables for the purpose are the ones which Helmuth Schwartze & Co. ceased to issue after 1911. Their statement is therefore given for that year:

Imports into Europe and North America

Grease Wool

Australasian	million lb	854
Cape		131
Total	million lb	985
River Plate	million lb	449
Other sorts		247
Total	million lb	696

The table shows that out of 1,681 million pounds imported, very nearly 59 per cent. was from the two main British sources. The exhibit understates the case, for the reason that the "Other sorts" are not all non-British and the abstraction from one column and their addition to the other could only increase the British side. The statement is confused by the inclusion of wools of different shrinkages and the succeeding table shows the same figures adjusted to a clean basis:

Imports into Europe and North America

Clean Wool

Australasian	million lb	440
Cape		54
Total	million lb	494
River Plate	million lb	220
Other sorts		168
Total	million lb	388

The revision does not affect the proportion very severely, for it still shows the British Empire to furnish more than 56 per cent. And if we continue the thread a little further and include the wools grown in the United Kingdom, Europe and North America, together with those from oversea, the statistics still give the British supplies a high importance to all the western world.

Produced in or Imported into Europe and North America

Clean Wool

United Kingdom	million lb	102
Australasian		440
Cape		54
Total	million lb	596
European	million lb	280
N. American		148
River Plate		220
Other sorts		168
Total	million lb	816

The conclusion is that of the wool that matters—the wool that manufacturers in Europe and North America see, or have the chance to buy—42 per cent and more comes from countries under the British flag. In the final presentment of the case the small Canadian clip, as well as some portion of the "other sorts," are included upon the non-British side of the account. In calculations which aim less at an unattainable pitch of accuracy than at a broad and reliable showing these blemishes are trifles. The main point is that out of the whole the British quota exceeds two-fifths.

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

(Translated and Revised by Samuel S. Dale.)

Frequently a 2 and 2 warp pattern is combined with a 1 and 1 filling pattern on a 2 up 2 down twill, producing the effect shown at Fig. 1717. Pleasing effects are obtained by alternating a 1 and 1 group with a 2 and 2 group of threads in the warp to produce stripes, or in both warp and filling to produce plaid effects. An example of the former is shown at Fig. 1718.

FIG. 1719

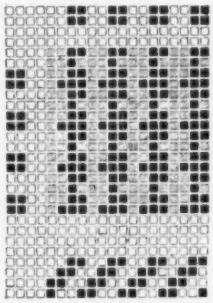
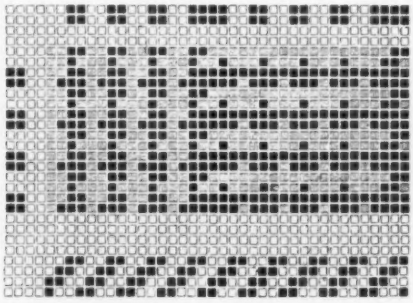


FIG. 1720



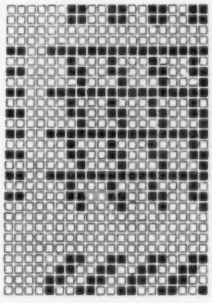


FIG. 1717

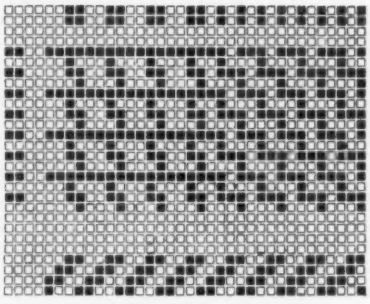


FIG. 1718

Longitudinal stripes are obtained with a 2 and 2 pattern in both warp and filling on a 2 up 2 down twill by laying one of the light picks in the shed when both light warp threads are down, Fig. 1719. Cross stripes are produced by the opposite order in which one of the light picks is laid in when the two dark threads are down. These two effects can be obtained in the same pattern by inserting 4 threads of one color where the change from one direction to the other is desired, as shown at Fig. 1720.

Check patterns can be made by introducing 4 threads of one color at intervals in both warp and filling, as shown at Fig. 1721. The pattern which is marked at both top and sides is complete in 18 threads while the effect covers 36 threads.

In this class of patterns the 2 and 2 group can be made of any desired size. It is not necessary that 4 threads should be of the same color; the pattern may be 1 light 1 dark 1 light 1 dark, or 2 light 1 fancy 1 light.

An interesting effect is produced by introducing 3 threads of one color after a group in which the color pattern is 2 light 2 dark, as shown at Fig. 1722. Here the pattern in warp and filling is as follows:

$$2 \times \begin{cases} 2 \text{ dark} \\ 2 \text{ light} \end{cases}$$

2 dark

3 light

13

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Nearly the same effect is obtained by a 3 and 3 pattern in the warp and a 2 and 2 pattern in the filling on the weave shown at Fig. 1188.

Figs. 1723 to 1733 show various color effects produced on a 2 up 2 down twill with different color patterns.

If line effects are to be arranged to correspond with a given motif the weave must be broken as illustrated at Fig. 1734. The color pattern in both warp and filling must begin 1 light 2 dark 1 light. The effect is shown at Fig. 1735.

The 3 up 3 down twill can also be used for color effects of this character. A difference of 1 thread between the color and the weave pattern causes a gradual slant of the twill effect as shown at Fig. 1736, in which there are 6 threads in the 3 up 3 down twill and 7 threads in the color pattern, the latter being 1 fancy 3 dark 3 light.

A peculiar effect is obtained by breaking and reversing the twill at regular intervals in warp and filling in connection with a color pattern having one thread more or less than the weave pattern. An example is shown at Fig. 1737 in which a 3 up 3 down twill is reversed at the end of each 30 threads. The

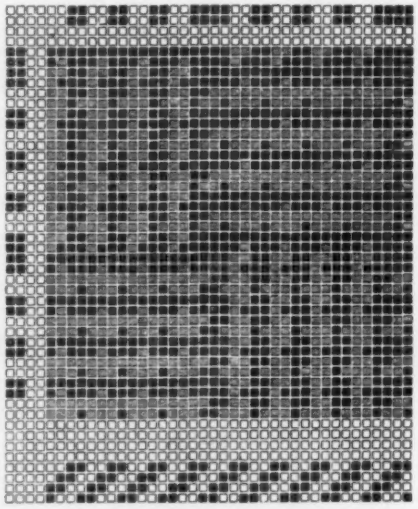

FIG. 1721

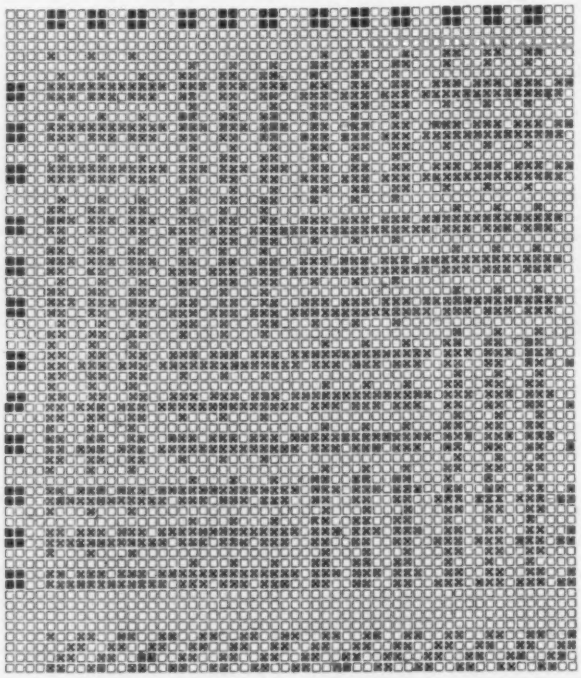

FIG 1722

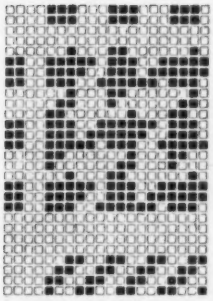

FIG. 1723

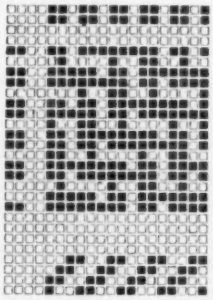

FIG. 1724

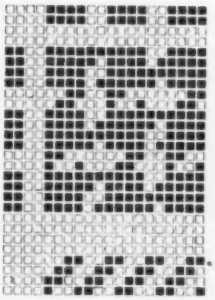

FIG. 1725

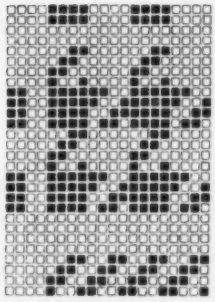

FIG. 1726

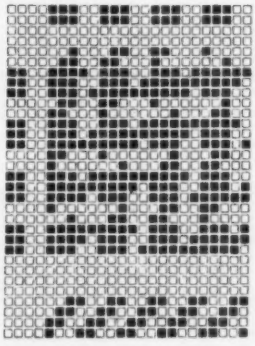

FIG. 1727

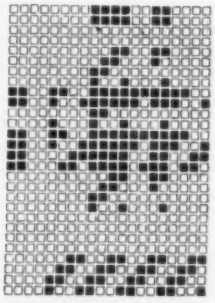

FIG. 1728

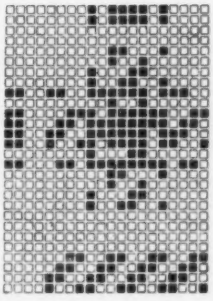

FIG. 1729

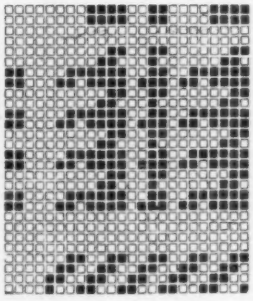

FIG. 1730

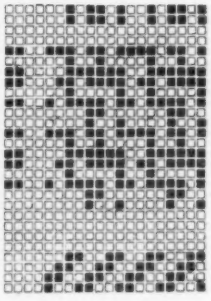

FIG. 1731

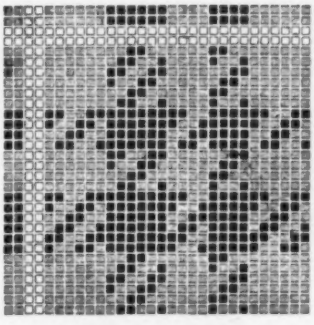

FIG. 1732

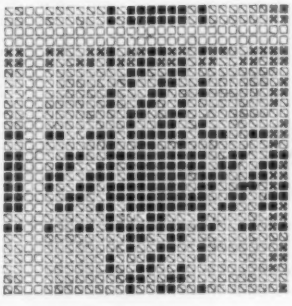

FIG. 1733

pattern in warp and filling is 2 dark 3 light. A part of the weave is shown at the bottom and side, the color effect being shown in the center.

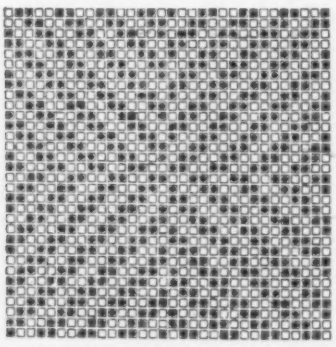

FIG. 1734

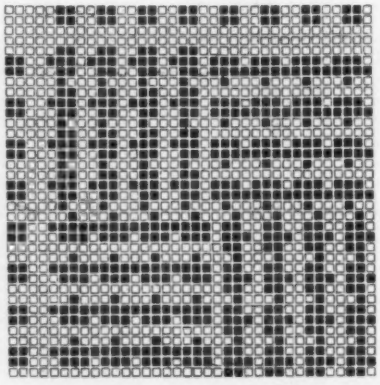

FIG. 1735

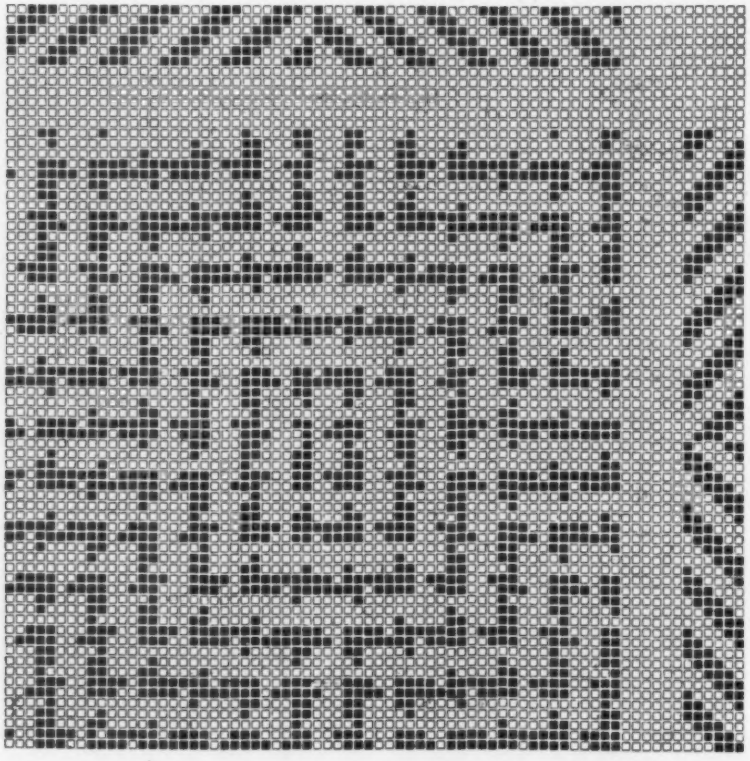

FIG. 1737

The effect becomes still more interesting and complex when the twill squares do not include an even number of the color patterns; for example, a reversal of the twill at intervals of 36 threads with a 5-thread pattern, 2 dark 3 light, in both warp and filling.

Squares are produced by breaking the twill in both warp and filling and making the

thread on each side of the break a different color from the body or ground. Fig. 1738 shows a 3 up 3 down twill reversed and resulting from the first-named arrangement. Fig. 1739 shows a stripe effect produced by a 4 light 4 dark pattern on a 4 up 4 down twill.

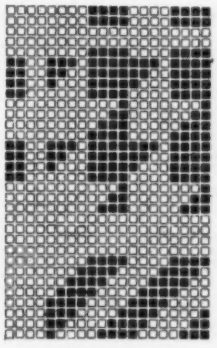

FIG. 1739

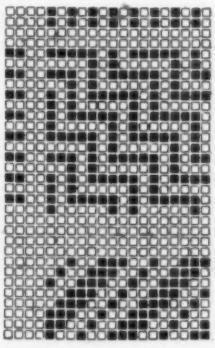

FIG. 1740

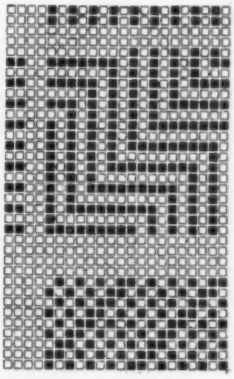

FIG. 1741

broken every 4 threads; the color pattern is 1 dark 2 light 1 dark, a dark thread coming on each side of the break. Fig. 444 is often used for suiting patterns, the colors being arranged 1 dark twist 2 light twist 1 dark twist.

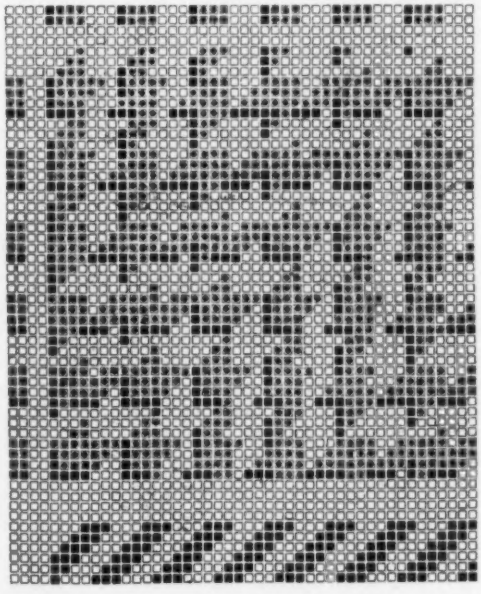

FIG. 1736

Similar effects can be obtained with the 4 up 4 down twill as with the 2 up 2 down or the 3 up 3 down twill, a coarser appearance Compare this with the stripe on a 2 up 2 down twill, Fig. 1719.

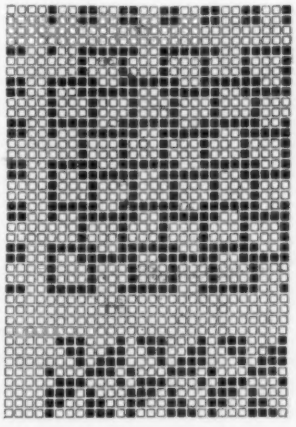

FIG 1738

The stair patterns shown at Figs. 1740 and 1741 are obtained with a 1 and 1 color pattern on an 8 and 9 shaft twills respectively.

The total of the imports of textile manufactures into Siam for the fiscal year ended March 31, 1914, was $8,378,655, against $6,913,989 for the preceding year. The imports for 1913-14 consisted of $6,748,273 worth of cotton goods, $120,505 worth of linen goods, $1,359,005 worth of silk goods, and $150,872 worth of woolen goods.

SHEEP DIPS IN URUGUAY

From Consul Herman L. Spahr, Montevideo, Uruguay, at the Request of the Textile World Record

The following are the best known sheep dips used in Uruguay:

Cooper's Dip. W. M. Cooper and Nephews, of Lincoln, Eng., have a branch factory in Montevideo. The dip is a dry powder composed of sulphur, lime, arsenic and tobacco.

Buchanan's Dip, a fluid paste, is made in England by Wilson Bros.

Little's Dip, a thick liquid, is made in England.

Sanador Dip is manufactured at Liverpool as a fluid paste and is said by some to be an imitation of Buchanan's.

McDougal's Dip, a liquid, is made in Scotland.

Rey de Oro Dip, with a base of lime and sulphur. All the above contain a great deal of sulphur and lime.

El Capataz Dip is made here from Virginia tobacco and is non-poisonous.

These dips are mixed with sweet water, according to directions. The Cooper dip is the most widely used and is also good for cattle. In the latter use it is mixed with a solution of soft soap and water to make it stick. Users of this dip claim that two dippings are sufficient to cure the worst case of scab in sheep if the scabs are broken with something sharp.

A government analysis is required of all sheep dips to be used in the country. The duty ranges from 40 to 60 per cent. and protects the local manufacturers from any serious competition.

Competent persons state that dip vats for sheep should be five feet deep, two and one-half feet wide at the top and eight inches wide at the bottom. There should be a covered draining or drying pen adjoining the vat, so that the sun will not drive the dip into the flesh. Sheep should be dipped after the first shearing, as less than half so much dip is then required. They ought to remain at least one minute in the vat. A curved stick is sometimes necessary in order to keep their heads submerged. They are not ready to kill for at least one week afterwards, since the meat would otherwise hold the taste of the dip. Uruguayan sheep raisers prefer a poisonous dip, saying that the non-poisonous will not heal the scabs. Aside from this objection, tobacco powder is considered a first class insecticide. All dips should be well mixed before using.

THE THERMAL EFFICIENCY OF CLOTH DRYING

BY G. H. PERKINS

In connection with a series of tests made to determine the economic performance of cloth drying machines of the can or cylinder type, sufficient data was obtained to render a thermal analysis possible and the results from this standpoint are given herewith. These results should be helpful to the engineer in estimating the probable steam consumption of such machines and processes, which in turn should enable him properly to proportion the steam supply piping as well as provide a suitable "drip" system. These elements are seldom carefully planned with any accurate provision of what is expected of them and hence are often the cause of unsatisfactory results in the process itself.

The usual remedy for such conditions is to increase the steam pressure to a point sufficient to offset the deficiencies in the piping system. This is particularly true where exhaust steam at from 3 to 5 lbs. gage pressure is used and where pipe sizes are kept small usually for the sake of economy of installation, no consideration being given to the large volume of steam to be handled. Nothing contributes more to the common but erroneous belief, prevalent among many manufacturing superintendents and overseers, that low pressure steam will not do their work properly, than insufficient pipe sizes. The limited capacity of the small pipes often used is overtaxed in carrying steam of the large volume per pound ordinarily available.

These tests are a portion only of a series carried on under everyday commercial conditions in one of the leading bleaching and

finishing plants of New England. The goods dried ranged from a napped shoe lining weighing 1.45 yds. per pound, to a sheeting weighing 5.15 yds. per pound. The dryer on which the tests were made, was of the familiar can type and consisted of 47 cans, each 23 inches diameter by 100 inches long arranged in four vertical tiers and having a total can surface (excluding heads) of 2,355 square feet. The arrangement of the

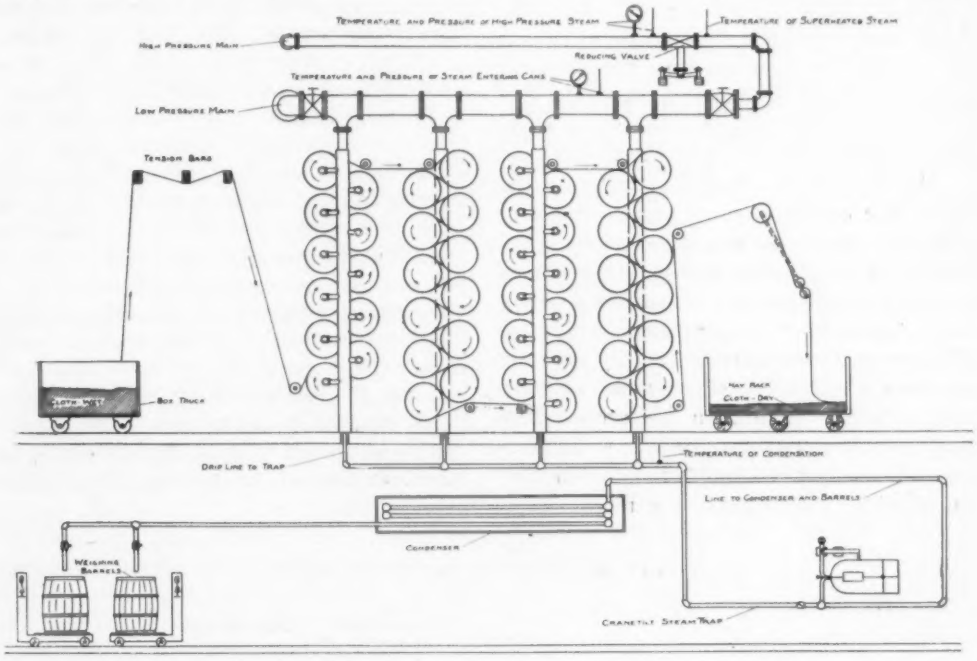

FIG. 1. A CLOTH DRYING MACHINE OF THE CAN OR CYLINDER TYPE

machine, piping, trap, condenser and weighing barrels is shown at Fig. 1. The surface of the cans in contact with the goods was 1.448 square feet, or 61.5 per cent. of the total area. All of the tests were run for an entire working day and in each case the total steam used includes that necessary in warming up the dryer in the morning or before the goods were put through. This of course lowers the thermal efficiency somewhat, but was included to obtain correct overall costs.

The goods were carefully weighed before and after passing through the machine and the surface speed of the cans was maintained practically constant by hand regulation of the throttle of the engine driving the machine. The speed was determined by a totalizing counter on the shaft of one of the cans and checked at frequent intervals by "cut meter" observations. Temperatures and pressures were taken every five minutes wherever thermometers or gages are shown on Fig. 1. The condensation for the entire machine was handled by a 2 1/2 inch non-return Cranetilt trap and discharged to the weighing barrels through the coil condenser shown, to avoid vaporization losses.

One of the subordinate objects of the tests was to make a comparison as nearly as the conditions would allow, between the drying value of exhaust steam and that of steam of slightly higher pressure somewhat superheated by throttling from boiler pressure through a reducing valve. The piping connections for both systems are shown at Fig. 1. The low pressure steam system in this plant was supplied in part from the exhaust of a number of reciprocating engines and the balance from a 500 k. w. automatic "bleeder" type turbine. The back pressure maintained was about 3 gage. It was not

possible to get as high a degree of superheat as hoped for on the low pressure side of the reducing valve when using live steam, as the high pressure steam had a comparatively long run from the boilers and contained considerable moisture before the reduction of pressure was made.

Although the results are not conclusive they show that while it was possible to obtain a slightly greater production from the dryer when using the superheated steam, the steam used per pound of goods dried did not decrease proportionately, thus reducing the net gain. While it is well understood that exhaust steam should be utilized in processes of this character if it is available, and would otherwise be wasted, in order to obtain a true comparison, its value for manufacturing purposes should be balanced against its value when reduced to terms of the best possible vacuum in a turbine or engine. In other words, the gain in thermal efficiency and production in the drying process when using boiler steam must be sufficient to offset more than the economy of using available exhaust for the same purpose. It is not intended to deal in this article with this phase of the matter as it would be of value only for the conditions of the individual plant.

The data and results are summarized in the accompanying table. The most useful of these figures will be found under pounds of steam used per pound of cloth dried and pounds of steam condensed per hour per square foot of total can surface. With these figures it should be possible to approximate closely the steam requirements for a dryer of this type and for goods of weight within the range tested. The thermal efficiency given is the ratio between the heat equivalent of the water evaporated from the goods at atmospheric pressure, to the heat supplied by the steam in the same time. It is clear that the efficiency of this type of dryer is comparatively high, on an average as high as boilers themselves in the average practice. The figures given on the heat transfer per square foot per degree of difference are necessarily based on average temperatures, but are reasonably consistent and show clearly the increase in the rate of heat transfer over that from still dry surfaces such as pipes, etc., due to the motion of the cans and the close contact of their surface with a fabric containing on an average about 50 per cent. of water.

DATA AND RESULTS OF DRYER TESTS

Dry goods (yds. per lb.)	1·45		2·50		5·15	
Kind of goods	Napped shoe lining		Napped shoe Lining		Sheeting	
Pressure in cans (gage)	5·7	2·7	4·7	3·0	8·1	3·0
Steam trap (F) in cans	234°	220°	256°	219°	237°	221°
Degrees superheat (F)	6°	0°	30°	0°	3°	0°
Temp. of condensation (F)	219°	218°	221°	219°	221°	219°
Duration of test (hours)	8.62	9·24	8.60	7·43	9·23	9·7
Steam condensed per hour. lbs.	2462	2240	2625	2575	3424	3031
Cloth dried per hour. lbs	1650	1511	1768	1696	1968	1701
Evaporation from cloth per hour	1571	1409	1892	1564	2112	1849
Water in cloth to dry wt. lbs.	48·8%	48·2%	51·8%	49·5%	51·7%	52·0%
Speed of cans yards p. m.	22	20	30	28	84	78
Temp. of entering cloth (F)	111°	108°	106°	104°	84°	84°
Room temp (F)	81°	80°	79°	82°	78°	82°
Lbs. steam per lb. dry cloth	1·49	1·59	1·63	1·72	1·75	1·76
Lbs. steam per sq. ft. per hr, total can surface	1·048	·950	1·125	1·09	1·455	1·285
B. T. U. per min., available for drying, supplied	40000	36100	43000	41500	55300	50000
B. T. U. per min., utilized in drying	27800	27600	33500	28200	45000	36300
B. T. U. per hr. per sq. ft. surface	1020	920	1120	1055	1410	1275
B. T. U. per hr. per sq. ft. surface per degree diff.	14	15·3	11·6	17·3	15·9	17·5
Yds. of cloth per lb. steam	·96	·91	1·54	1·45	2·95	2·93
Water evap. per lb. steam	·638	·630	·72	·61	·615	·61
Thermal eff. of dryer	69·5	76·5	78·0	68·0	81·5	72·7

THE TEXTILE INDUSTRIES OF GREAT BRITAIN AND GERMANY

BY J. A. HUNTER

(A paper read before the Royal Society of Arts, London)

In this country, as one need not say, there are divisions within the industry corresponding with the materials worked—cotton, wool, silk, linen and jute; divisions also corresponding with the class of work done—spinning, weaving and finishing. Structurally, the industry is much the same in Germany as in this country. Concerns are organized to do nothing but spin, or nothing but weave, in both countries, and in both alike sub-division is carried further in some directions than in others, leaving mills in special branches of business fully self-contained. In those respects there are no highly significant differences, the one fact claiming passing attention being that there remains in some parts of Germany a cottage-weaving industry of which we have no exact counterpart. In addition to the fairly numerous hand-loom workers engaged upon costly silks, there were recently some 7,000 hand-looms in Upper Franconia, Bavaria, weaving cheap and coarse mixed woolens for export. Such a survival is only possible where low wages are the rule.

In the silk trade hand looms are more numerous than in this country, but then the whole German silk industry is on a larger scale. In both countries hand-looms are a diminishing quantity in the silk trade, and are being replaced by power-looms electrically driven. In the German silk trade the standard of efficiency is admittedly high, and it is the habit of some British silk manufacturers owning modern factories to compare their own practice with German practice, which they accept as the standard.

Our textile industries are distributed more or less over the whole country with strong concentration upon certain centers, and with less important seats between; and Germany, with its Rhineland, Saxon and Silesian strongholds, and its sprinkling of minor centers, does not conspicuously differ. The geographical distribution is like the English in that the bunching is most marked in the neighborhood of coal-fields.

In both, textile industry employs—or did in 1907 employ—substantially the same number of persons, approximately 1,100,000 in Germany and 1,200,000 in this country. This is not, however, to say that the industries are of the same size. The German census of production points to a gross output of £150 millions where ours tells of an output at least twice as large. The discrepancy is striking, in view of the substantial equlity in personnel, but no deductions can be drawn from the bare fact without regard to the composition of the industries.

There are in the world, according to the International Federation of Cotton Spinners, some 145 million spindles spinning cotton. They are not all moving at the same speed or making yarns of the same fineness, but their number is known with approximate accuracy, so that they afford a limited index to the size of the industry. Of these spindles some 56 million are in England and 11 1/2 millions in Germany. Ranking next after the United States with its 31 1/2 millions, Germany occupied the third place in cotton spindleage. England has roughly five times as many spindles as Germany, but the spindles are not alike.

The mule, or intermittent spinning machine, is the staple producer in England. The ring frame or continuous machine, accounts for about half the spindles in Germany. With ring frames, which in this country are used principally for spinning warp, and in Germany are largely used for spinning Indian cotton and waste cotton, the two countries are about equally equipped, with some four or five million spindles each. Of mule spindles we have approximately ten to the German one, and it is apparent that in England cotton yarn is spun to a much higher average fineness.

Per thousand spindles, according to the latest trade figures, British mills consume in a year 77 bales of raw cotton, German mills use 158 bales, or roughly twice as much, indicating that their yarns are more than twice as coarse upon the average. The difference, although considerable, is less violent than between the small Swiss industry, with its consumption of only 70 1/2 bales

per 1,000 spindles per annum, and the rudimentary Japanese with its 690 bales. When in 1907 Germany had an outturn of cotton yarn valued at £31 1/2 millions, our production was returned at £79 millions, or 2 1/2 times as much. With five times as many spindles and three times as many looms as the German, the British cotton industry must be called very much the larger in every respect.

There is a much closer correspondence between the sizes of the respective woolen and worsted industries. Not all the products of the woolen and worsted trades are manufactured into fabrics in this country, and accordingly the comparison cannot be limited to them alone. But when this is done the available data show for the United Kingdom, in 1907, an output of £42.3 millions in fabrics and for Germany £38 millions. The estimates of the total make, based upon the 1907 census, show that England combed nearly twice as much wool as Germany and spun about 20 per cent. more yarn. It is apparent also that England wove some 50 per cent. more length of cloth, 397 million yards against 270. Thus, although the English woolen and worsted industry is materially the larger, there is no such preponderance as in cotton.

The comparison is all in German favor when we come to silk. Where silk employs 32,000 in England, it employs 66,000 in Germany. Five millions sterling covers the gross output of English silk spinning and weaving, while the German industry has an output three times larger (or £14.8 millions) in silk tissues alone, apart from its output of thrown or spun yarn.

The German linen industry, once important, has now some 280,000 spindles, or fewer than half as many as the North of Ireland. It produced 69.9 million lbs. of yarn in the same year as the United Kingdom spun 158 millions.

The German jute industry has expanded of late years to dimensions which have given rise to complaints of over-production. It is, of course, wholly dependent upon Bengal for supplies of raw material, and in the open market it does not compete profitably with Calcutta and Dundee. The German output of jute yarn in 1907 of some 297 million lbs. was nearly three-fourths of the British 417 millions.

Thus in scale Germany has the advantage of us in the silk trade alone; a trade which in our country has for better or worse been exchanged for cotton and wool.

A broad resemblance may be traced in the fact that both England and Germany export something like half their total make; the Germans less than half, and the English more. The gross value of exported British textile manufactures was £176.6 millions in 1912 against the German £72.75 millions. Our export of cotton was £122 millions, theirs was £25.4; our export of wool goods £37.7, theirs £20.6; our export of silks £2.2 againts their £11.9. In other words, our immense lead of £100 millions and odd arises in chief from the cotton trade, which has, of course, been built for export purposes, and exports some two-thirds of its production.

Some apology is required for so many figures, but without a few of them the general situation cannot be outlined. The trade of the two countries has not been all in finished goods, nor in the direct sense competitive, and it has been in an important part reciprocal. We have been in the way of sending textile manufactures and apparel to the value of some £19 1/2 millions to Germany, and of buying £14 1/2 in return. The two markets have depended on, or made use of, each other, and the industries have been interdependent too.

We have been in the habit of supplying German industry with raw material; witness the 8 million lbs. of British wool shipped to that country last year, a quantity independent of the almost twelve times greater volume of colonial wool bought from the London Docks for German consumption. German industry again has taken off our hands raw by-products generated in course of manufacture in this country.

In preparing cotton we accumulate heavy quantities of cotton waste, and the soft or untwisted waste of Lancashire mills has gone extensively to Germany to be treated

according to German systems, and to be worked up into soft yarn for machine knitting or weft for cheap flannelettes. When re-manufactured with or without an admixture of Indian cotton, such as Lancashire prefers not to use, some of this waste in the form of yarns and goods comes back to this country. Then in combing wool we remove short fiber, or noil, a by-product not suitable for the uses of worsted manufacturers, but valuable for blankets, tweeds, and various woolen cloths. Germany has been the chief destination for such wool wastes as are not used at home.

German worsted spinners—and one might add French and Belgian as well—employ machinery for spinning the finer wools different from that employed in England. They use the intermittent machine or mule where we use the continuous spinning frame. This difference of practice results in a certain dissimilarity of the product. The mule permits a serviceable yarn to be made with less twisting of the fibers than is involved in preparing material for the frame, and thus gives a bulkier and more spongy thread invaluable in producing fabrics of certain types. It allows fiber of a given length of staple to be spun to rather higher numbers than upon the frame, and, by employing suitable wool combs, it is practicable to work without oiling the fiber, a dispensation which has sometimes been said to facilitate the dyeing of fabrics to fine shades, and which spares hosiery manufacturers some trouble in scouring knitted underclothing before sale. Mule-spun worsted is probably never so durable in wear as the English cap-spun yarn; in some circumstances it is so easy to weave, and for certain fabrics it is definitely suitable even in appearance. Within limits the two kinds are interchangeable, but beyond those limits the one does not serve for the other.

Often as he has been urged to take up the mule, the English worsted spinner has in general stood by his frames, and the decision may be said to have been dictated by results. Owners of machines of both types have found in their experience the frame to be the more consistently remunerative of the two. And although the last few years have seen a very considerable expansion of plants for spinning fine wools in England, the new machines have been almost exclusively frames. In effect, the available volume of business has been partitioned out, not by any formal or informal agreement between the parties, but by the logic of self-interest. The English have left the mule-spinning of fine wools to the Continentals, and they in return have left the production of frame-spun botany or merino to us. It remains open for anybody to depart from that practice at any time, and there is more present temptation to embark upon mule spinning in England than ever.

Owing to the difference of scale a business worth a couple of millions per annum means more to British woolen and worsted manufacturers than to the cotton trade. The amount is, roughly, one-tenth by value of the exports of woolen and worsted cloth, and the German purchasers have been preponderantly in goods of the highest class with an average value between 5s and 5s 6d a yard. The market has been of especial moment, not to makers of cheap goods, but to firms whose claims to attention are built rather upon supreme excellence than upon advantages of price. Scotch tweeds, Huddersfield fancy worsteds and West of England cloths, corresponding in quality with those chosen by the best English tailors and resembling them somewhat in design, have been sent for wear in Berlin and the great cities. The similarity in design is not complete, for every country has its own quirks and twists of taste, and our designers, playing up to Continental preferences, have supplied sporting novelties in colors and patterns in which one would not choose deliberately to be seen at home. They are goods in which our manufacturers have established what is called an individual ascendancy; an ascendancy moral in respect of taste and propriety, material in respect of finish and workmanship, and admitted in both respects. The cloths are not all of a fancy character, but flattery in its sincerest form has been applied with some pertinacity to English designs.

German, and still more Austrian, firms have been in the way of copying the patterns produced at heavy expense by Scotch and Huddersfield houses, and drastic cooperative measures have been required to suppress the piracy. Protests in Berlin against the passion for English cloth, and petitions from German makers of cheviots praying for Imperial intervention to discountenance the wearing of English clothes, have further attested the position held by these goods in the German market.

It is, of course, inevitable that all trade to Germany in articles having the character of luxury should suffer from the war. The impoverishment of the classes accustomed to choose expensive clothes, the destruction of so large a part of the flower of German aristocracy, and the antipathy towards England and things English, all forbid the expectation of a return, in any circumstances, to the status in quo.

The larger part of our trade with Germany, being in semi-manufactures, is destined to suffer in at least the same proportion as the consuming industries. To what extent German textile industries may suffer is uncertain, but the war may conceivably give them a considerable setback, with effects perceptible in years to come.

It can cause no surprise to hear mutterings of severer losses to be inflicted upon the British. One of the journals of the German textile trade was declaring a little while ago that the freeing of German industry from all dependence upon England, whether for goods or raw materials, would be the task immediately confronting the country after the war. No doubt efforts to that end will gain a new impetus, but it can, of course, be reflected that such efforts are not novel. Germany has done her best to dispense with English assistance in the past, and it is by no means certain that she will fare any better in the future. It is true that our sendings to Germany have been larger than German sendings to us, but it does not therefore follow that their market is of more importance to us than ours is to them.

It is at least arguable that the main part of the German supplies to the English market are actually the more readily replaced of the two; and that such of them as cannot economically be manufactured in this country can more easily be obtained from alternative sources than can the goods supplied to Germany by us. If, for want of suitable machines, we cannot produce the relatively small quantity of woolen and worsted yarn imported from Germany, there are machines quite equal to the task in France and Belgium. The inability is not admitted, because there are more ways than one in which the supply can be replaced by home industry, but there is this alternative in reserve. The case is similar also in respect of the imported woolen and worsted cloths and dress goods, valued at nearly £1 1/2 millions per annum, which are also of the type made in the countries bordering upon Germany. We can perhaps count on the French for any requisite assistance also in making the home market independent of Germany for silks.

Threats of making German industry independent of England in raw materials need dismay us even less. Dependent utterly upon Bengal for raw jute, mainly upon Australia and South Africa for wool, partly upon Bombay and Egypt for cotton, the Germans are in no position to proclaim a boycott, and the menaces issued in moments of exasperation can readily be given their proper value. The imported German goods of most importance to them and to us are German specialties, even as our exports are mainly in British specialties. Of some £7 millions worth of various manufactures of cotton imported from Germany something more than one-fourth is classified officially as piece goods, a heading which conceals the softer, cheaper and more dangerous classes of flannelette, calico printed in German designs, cotton tapestries and some other goods.

(To be continued)

The imports into China of woolen and cotton mixtures, woolen goods and miscellaneous piece goods during 1912 and 1913 amounted to $7,561,731 and $8,585,135 respectively. Of these imports, Shanghai handled over 50 per cent.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

COLORS FOR TROPICAL COUNTRIES

Editor Textile World Record:

Please state what colors are best for dyeing goods for the tropics, whether sulphur or developed colors. Exporter (2425).

Generally considered, there is but little to choose between the sulphur group of dyes and the so-called developed colors, except that the former are the easier to apply and consequently the cost of dyeing per shade will be less than with the developed colors. Of course, the choice of colors for tropical countries will fall to those dyes that yield shades least affected by sunlight and general exposure, as the wearers are much more out of doors in warm countries than in colder climates, and that the sun's rays are more destructive to colors.

Sulphur colors have been found excellent for cotton cloth for tropical wear, and especially so when the dyeings have been after-treated with bluestone, bluestone and chrome, or with chrome alone. While fast dyeings can be produced with the diazotized and developed colors, the cost of dyeing may have an influence on the desirability of making use of them, particularly as the majority of the shades capable of them is limited as to brightness. On the other hand, large quantities of cotton cloth are sold in the tropics that have been dyed only with the direct or substantive colors and without any claims for fastness. Such fabrics are purchased and worn mostly by the lower class natives, and in many instances acquired by barter.

Kashgar.

The question is not one to which an unqualified answer can be returned. The goods are presumably cottons and the developed colors in question are doubtless the vat dyes, applied to the fibre in a reduced state and developed by subsequent oxydation., The matter is partly one of the particular shades required and in response to what appears to be a law of nature the population within the tropics has a preference for brilliant shades. The sulphur colors are rather lacking in brightness. Again, within the tropics there is broadly a preference for cheap goods. Sulphur colors have the advantage in price. It is, however, possible that what "Baupp" really wants to know is which class of dyes are the faster against light. A judicious selection from the vat or developed colors is preferable from this point of view, although it has to be pointed out that vat colors are not all equally fast. Reds and oranges are of doubtful fastness in particular. The results from any test depend upon the conditions of testing and the strength used. With this reservation the result of tests made upon developed reds and oranges by Walter Ermen in Manchester may be recited:

Very good	5 samples
Good	3 samples
Poor	4 samples
Bad	3 samples
Very bad	3 samples
Total	18 samples

A scarlet sample which apparently turned out worst of all was condemned as "Fades white after seven days." It is therefore necessary to choose even between vat colors. Sulphur dyes may be all that are required in relation to the quality of the goods or a higher standard may be requisite. The people in the tropics have different standards of excellence and there is nothing to prevent the two from existing side by side even within the same tropical country.

Wessex.

BLUE SPOTS ON KNIT GOODS

Editor Textile World Record:

We have read with interest the reply to the question from "Nixon" (2427) regarding blue spots on knit goods, which appeared in the February issue. We are interested in this for the reason that we are having the same trouble and have been unable to locate the cause. We note the suggestions made, such as bleaching near blue dyeing tub, using blue after bleaching, marking the goods with blue crayon, dropping of specks from the floor above, or steam from boilers. We thought that possibly our investigations might be of interest to "Nixon".

We have had special yarn made using all colors of soft crayons that the cotton mill uses in marking the roving, that is, we used a lot of it in spinning a number of cops and found that they practically all bleached out, and those that did not were not marked with the blue color which was giving us trouble.

We use no blue whatever in our process of bleaching, either before or after. We use no blue of any shade in our plant, the only colors we manufacture being bleached white and stained Egyptian goods. Our bleach house is entirely separate from the dye house. We have placed on samples of cloth all the different colors that we use in making Egyptian, have stained our cloth with oil used on the machines, oiled the machine so that it would run a lot of dirty grease onto the cloth. In fact we applied everything that could or could not come in contact with the cloth in process of manufacture, but none of them produced the blue color.

Our vats are made of wood and heated with a lead coil, the solution coming in contact with nothing except wood or lead. The steam in the boiler does not escape into the liquor, the coil being continuous and tight. The water used in mixing the peroxide solution is all filtered through a Hungerford & Terry filter. The graphite pencils used in marking the end of the rolls do not produce the blue color.

We have come to the conclusion that this blue must get into the yarn before we receive it. The mill manufacturing the yarn has taken cotton from the bale and kept it separate in the various processes, watching closely every operation to see that it did not get mixed with black flyings, running it when they were not making anything but peeler yarn, yet we still had the blue spots in the goods. We have finally come to the conclusion that the only sure way of eliminating the trouble is to bleach the lime. This removes the spots completely.

We also had trouble with pink spots, as well as blue, but we discovered these were caused by scarlet felt bobbin covers. The scarlet flyings from the bobbin covers would be carried by the yarn into the cloth, and the color would bleed, causing the pink spots. We took several single fibers, placing them at different points in the cloth and put them in the bleach, laying a piece of cloth on top of it. The scarlet from a single fiber would bleed, making a pink spot on the cloth to which it was applied. It would also run into the cloth lying next to it, making two spots. We eliminated the pink, but could not eliminate the blue. These suggestions may be of some benefit to "Nixon" and save him a number of experiments. Delaware.

FRAYING OF RAW SILK

Editor Textile World Record:

Is there anything that can be used to stop a tender grade of raw silk from fuzzing up between lease rods and harness? Some grades of raw silk seem to have very little natural gum and in the opening and closing of the harness the silk will fray up. Weaver (2385).

I would suggest setting the loom so that center beam, center of lease rods, eye of harness and fell of cloth are exactly level and parallel. Have the fell of cloth close when the harness are level. See that the reed is loose and moves easily up and down sideways; also that the harness are free and easy. Using paraffine wax or a good olive oil or silk soap on the warp towards the harness will help. In some cases vaseline or a composition of neatsfoot oil and soap will give good results. Boil 1 pint of neatsfoot oil and 1 pound of soap together until dissolved. Apply cold to the warp with a piece of silk waste. I would suggest that if the silk is not already wound, not to soak it, as this loosens the natural gum and makes

the silk fuzzy and harder to wind. Warp the silk in 2 rods, as is done in the low Swiss warper. This will prevent sticking behind rods. The lease rods should be as near the harness as possible. It is better to tie the two rods on top of one another, directly behind the harness. Lithonia.

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STAINS ON COTTON PIECE GOODS

Editor Textile World Record:

Enclosed is a sample of coutil cut from a damaged corset. These stains appear on the better grade of coutils from three to six months after the corset is laundered, wrapped and boxed, and never on cheap coutils or batiste. I think they are caused by some chemical or solid in the bleaching solution that is not thoroughly removed before finishing. When the corset is sprayed and ironed, some slow chemical change begins which makes these spots. Can you suggest a remedy? Welmont (2396).

The stain on the sample submitted is evidently a kier stain, generally found in heavy goods such as coutil, duck and drill cloth. These stains are found more frequently on goods bleached with the caustic process than with the lime and ash boil. They are principally due to the forced method of bleaching and will be quite prominent if the kiers are not whitewashed often with a lime wash. They are a combination stain of decomposed dirt and iron from the kier, and which are taken out by the bleaching agent. But after lying for a certain period a reaction sets in and the stains will reappear, especially if the goods are put up a little moist or kept in a warm place. I believe the whole trouble is due to the goods not being thoroughly bottomed, or in other words, underbleached. They should be left a longer time in the boiling process. Have the kiers washed often with a good thick solution of lime wash, and if a bleaching compound is used with the caustic soda or soda ash, cut it out at once and use only caustic soda and soda ash, discarding all bleaching assistants. If necessary give the goods a longer boil and less time in the chemic bath, as this does the work better than a short boil and a long bath in the chemic. Keep a watch on the kiers and if there are any stains they will be found not far from the top of the kier, in which case plait them on one side and put them back in the kier, giving them a reboil, before entering into the chemic bath.

The reason for these stains not appearing on the cheaper goods is because the dirt and grease are decomposed more easily in the lower grades than they are in the better grades. This is why I contend that the stains are from the kier. The only remedy is to give them a longer boil or otherwise give the heavy goods an extra boil with a good wash between to remove all the decomposition.

I had a lot of trouble at one time with some heavy drills. A stain just like the one submitted caused me a lot of worry and I kept a good watch on the goods and even after a second boil the liquor that was run off the goods in the kier was almost the color of molasses and the stains appeared quite frequently near the top. The only way I overcame this trouble was by giving the goods an extra boil of four or five hours. I did not leave the goods quite so long in the chemic bath and the results were a better bleach and a better finish. Delco.

On examining the sample of cotton goods I find that there are two things which may account for these stains coming up after the goods had been stored. First, the goods may not have been sufficiently boiled before chemicking. Second, the goods were not sufficiently soured before chemicking. Either of these would cause stains similar to these appearing on the sample submitted. It is my opinion that the goods were not sufficiently soured after chemicking, and I would advise the use of a good sour at 1 1/2° Tw. with muriatic acid for this heavy cloth.

Morocco.

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MIXING VEGETABLE FIBERS

Editor Textile World Record:

We require for our cereal bag factory here in the Argentine a machine to make the cloth here. We require a machine that will mix the two vegetable fibers, samples of which we enclose, also a knitting machine and a loom to obtain cloth similar to sample enclosed. The knitting machines should have a capacity of from 30 to 60 inches wide. Omar (2414).

The two fibers sent by "Omar" which he desires to use in the manufacture of cereal bags, appear to be jute and a very low grade of flax tow, probably from straw of flax grown for seed. I see no necessity for a special machine to mix the two fibers to-

gether. If run into the sliver separately, and the two combined in the next run or drawing, they would be well mixed when spun, though the sample of flax fiber is so full of fragments of shive that it would make a dirty, lumpy yarn. One of the chief objections to the use of low-grade flax tow in the bagging made to bale our cotton crop in the sixties, was that the shive which remained in the yarn injured any cotton baled with the bagging. The shive and trash present in the sample before me would doubtless become mixed with the cereal in the filled bags, from handling, and to that extent would work injury. If the proposed use of this fiber is on the score of cheapness it should be remembered that such low-grade material can produce only a very inferior product. It would be better, therefore, to use the jute alone. It would seem that the attempts to utilize this worthless seed flax for spinning fiber will never cease, in spite of all that has been written on the subject. Charles Richards Dodge.

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DYEING SKIN WOOL

Editor Textile World Record:

I enclose sample of skin wool which you will see is dyed a graduated shade from the skin end to the tip. It was dyed by the after-chrome process. Do you know any way in which it can be dyed uniform? Rockland (2419).

This wool has all the indications of having been partially burned during the dehairing of the pelts. That portion of the fiber which is the least dyed has been so altered in its properties as to resist the dyeing operation. Under such conditions it is difficult to revive the natural vitality of the fiber, but it seems possible, however, to treat the wool so that it will take the color better than the sample, by mordanting with about 2 1/2 per cent. of bichromate of potash and 3 per cent. of crude argols or lactic acid, allowing a long time in the boiling bath, say, two hours, so that a good bottom of chrome is obtained. Commence the mordanting at a low temperature, and gradually bring to a slow boil. Dye with suitable chrome mordant colors or even with logwod. For this character of stock, the general opinion, borne out by practice, is that the best results are obtained by dyeing on a chrome bottom rather than by the after-chrome process.

Horse hair, used for upholstery, is considerably stained by urine, which so alters its dyeing properties as to cause much trouble. This is overcome by giving a good chrome bottom. Berwick.

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STRENGTH OF YARN

Editor Textile World Record:

We are making a 30s warp yarn and it is breaking below standard. What will increase the breaking strength? The lap is 12 oz.; card sliver weigh, 45 grains; 1st drawing weighs, 46 grains; 2nd drawing, 50 grains; 70 hank sliver; 175 hank intermediate; and 5.75 hank speeder.

Peronne (2381).

From the information given it is possible to calculate only the drafts of the work. With the exception of the card, they are not too long. The draft of the card may influence the strength of the yarn. It is not necessary to run such a long draft in this case. By slightly lengthening the drafts in the processes following the card, better work can be obtained. Long drafts are at times necessary in order to make the work fine enough when the other processeses are drafted to the limit. I do not want it understood that the draft of 110.83 1/3 inches (allowing 5 per cent. for loss due to fly and stripping) is a long draft or beyond the maximum, for it is not. Some mills run longer drafts, which is all right if their grade of work will stand it and the fibers are not injured. The longer the draft the longer the fibers are held by the bite of the feed roll and the longer the fibers are exposed to the action of the lickerin. One of the functions of the lickerin is that of combing and straightening the fibers. As long as the feed roll holds the fibers they are combed. Then the feed plate should be of proper dimensions. The distance from the bite of the feed roll to the lower edge at the point where the teeth of the lickerin are nearest to the face of the plate should be from 1/8 to 1/4 inch longer than the average length of staple being worked, otherwise the fibers will be broken by the lickerin teeth, which take the fibers away before they are liberated from the bite of the feed roll. The angle of

the face of the feed should be such as to cause the teeth of the lickerin to comb the fibers for about two-thirds of their length before they become detached. From this it can be seen that a shorter draft shortens the time the lickerin has to act upon the fibers, causing less broken, injured or strained fibers.

I have worked out the following tables as an illustration to show how the draft on the card can be shortened, increasing the draft in the after processes but slightly and without injury. The tables show the draft of the card shortened 11.08 1/3 inches, but it can be shortened still more by slightly lengthening the draft on the speeder and spinning frames.

Table 1 shows the present draft. Tables 2 and 3 show two different methods:

	Table 1	Table 2	Table 3
Weight of picker lap	12 oz.	12 oz.	12 oz.
Draft of card, allowing 5% for waste	110 833 in.	99.75 in.	99.75 in.
Weight of card sliver	45 grs.	50 grs.	50 grs.
Draft of drawing frame, 1st process	5.87 in.	6 in.	6 in.
Weight of drawing frame, 1st process	46 grs.	50 grs.	50 grs.
Draft of drawing frame, 2nd "	5.52 in.	6 in	5.77 in.
Weight of drawing frame, 2nd "	50 grs.	50 grs.	52 grs.
Draft of slubber	4.20 in.	4.20 in.	4.24
Hank roving of slubber	.70	.70	.68
Draft of intermediate	5 in.	5 in.	5.15
Hank roving of intermediate	1.75	1.75	1.75
Draft of speeder	6.57 in.	6.57 in.	6.57 in.
Hank roving of speeder	5.75	5.75	5.75
Draft of spinning frame	10.434 in.	10.434 in.	10.434 in.
Number of yarn	30	30	30

"Peronne" does not say anything about the amount of twist in the yarn. It may be that he is figuring the twist with the ratio of whorl to cylinder as given in the catalogue of the machine builders. This may be all right for some work, but it may not be right in the case under consideration. The proper way is to find out what the ratio really is. This can be done by marking a spindle and also the driving pulley, and turning the pulley around once, counting the number of revolutions of the spindle. This should be done several times with different spindles and the average taken for the ratio. The size of the band changes the ratio considerably, the larger band revolving the spindle more slowly than the smaller band. The larger band does not go down as deep in the V-shaped whorl, which acts like a larger whirl. Perhaps the wrong ratio is being figured and the standard turns of twist per inch for No. 30 yarn are not put in.

The cotton yarn that is used may be of an inferior grade. The ripe cotton fiber when seen under the microscope has the appearance of a collapsed twisted tube with corded and slightly corrugated edges, resembling an elongated corkscrew. The twisting which the fibers receive in spinning interlocks these convolutions, giving great strength to the yarn and overcoming any tendency of the fiber to slip over each other when the tension is applied. These twists or convolutions of the cotton fiber are not as numerous in half ripe fibers and are almost lacking in unripe or immature fibers. Poor varieties have less frequent convolutions than the better varieties. As the cotton advances and is drawn and calendered by the different processes the fibers are straightened and do not look as curly as when first entering the pickers. All this influences the strength of the yarn. The roving should be twisted as little as possible, it being necessary only to hold it together to be unwound in the preceding process. The aim in making yarn should be to give the coton fiber its natural freedom, so as not to destroy the convolutions any more than is necessary.

I have pointed out some of the defects that influence the strength of yarn, but it would be impossible with the information given to say exactly what the cause is in this case. I would advise shortening the draft on the card; the other processes are not over drafted. The drawing would be better if it was not drafted much over six. Winton.

Many causes affect the strength of yarn. They arise in both the carding and spinning

rooms. The stock should be thoroughly mixed and should not have excessive beating in the pickers. We plan to deliver to beater a body of stock of about 50 to 60 ozs. per yd., say four laps of 15 ozs. each, and beat it at the rate of 35 to 40 blows per length of stock delivered. If the body of stock is lighter, less blows; if heavier, more blows. The drafts should be adjusted so as to spread the stock evenly on screens. The draft on the cards should be 100 or over. We have found a 13 oz. lap on 1 1/8 inch stock and 50 grain sliver is about right. "Peronne's" lay out and drafts are very good. He should see that the weights are not too heavy, and the calander rolls not too tight, otherwise they will crush and injure the stock and a fine powder will show near the trumpets. See that there is not excessive draft at the calander rolls.

If these points are looked after, the strength should be up to standard. A good even thread that is not overworked or overtwisted should be the result. Minto.

TERMS USED IN KNITTING

Editor Textile World Record:

I would like to have you give an explanation of the following knit goods terms: Swiss rib, Norfolk and shaker knit. Norfolk (2407).

A Swiss ribbed knit garment is slightly different from the regular stitch. A special cam is used in the cylinder to hold down more needles than ordinary. This makes the cylinder wales more prominent. In nearly every case needles are left out, in front and back for a number of inches. This gives the effect of stripes. There are many so-called Swiss ribbed goods on the market, but not one in five is the real thing. Most people believe that because a garment is a light weight and knit on a fine cut frame with needles left out, it is a Swiss ribbed garment. A knitting machine has to be specially prepared to make it.

I cannot explain the word "Norfolk," unless it is a trade mark or something to distinguish one sweater coat from another. These new names for sweater coat stitches crop up quite often.

"Shaker knit" is derived from the heavy goods knit by hand by the Shakers in New Hampshire, with long bone knitting needles. Later on they were made on circular knitting frames. Shaker knit stands in about the same class as Swiss ribbed, as far as the real Shaker knit is concerned. Up to a few years ago, I knew of "Shaker knit" goods made in Brooklyn, N. Y., and Philadelphia, Pa. These were made on anything from a hant knitting machine to a twenty-inch circular latch needle machine, cut three needles to the inch. Another case I have in mind was as near the real thing as possible. The goods were made in a sweater shop in a New Jersey city and all knit by hand, using the long bone needles. Trenton.

LOUSY SILK

Editor Textile World Record:

I am enclosing a sample of lousy silk. You will notice the streak running through the black skein, which is Japanese stock. The colored sample was cut from a skein of Italian silk. We dyers usually contend that it is in the stock, being caused by dead or damaged cocoons, but circumstances which came under my observation in the throwing of the silk have caused me to submit the samples and ask for an opinion.

In the throwing of silk, water stretchers are used, the rolls being copper covered with tin. I noticed that the tin was almost entirely worn off, exposing the copper. The silk, which in throwing is more or less saturated with oil or an oily solution was left on the copper exposed rolls over night. I understand it is the custom of most throwsters to see that the silk is all run off before stopping for the day. The question is, would the copper have any injurious effect on the oily silk? Oil being a fatty acid, coming in contact with the copper has a tendency to form verdigris, which I should think would be undesirable. The dyer being the last person to handle the silk usually has to stand for a lot of blame and criticism, which is often unwarranted.

Hagar (2383).

Some silks are subject to lousiness, showing a specky appearance in the finished goods. Careless boiling-off by the dyer will promote this defect. Great care should be taken not to boil off silk too much. It is better to leave some gum in it. The tubs should be perfectly clean and no strong alkali used in the boiling-off suds, as this is very injurious to the silk and will open up the fibers too much and cause specks to appear. In throwing the silk is soaked in a solution of oil, soap and water in order to make it wind better, as this loosens the gum. It happens sometimes that the flyer on the

spinning frame is cut. This will cause the thread to become fuzzy and frayed, which also causes lousiness. If silk remains on copper rollers over night and it should happen that verdigris has formed, the silk will naturally absorb it, causing a tendering of fiber, which will show up fuzzy and specky after boiling and dyeing.

The specks in the sample of black silk received are probably due to this, but the sample of colored silk looks as if it might have been subject to careless boiling-off. The soap foam degumming process should be used, providing no strong alkali is present. Lithonia.

PRICE OF RUBBER THREAD

Editor Textile World Record:

Can you give us information as to the price at which rubber thread is sold in lots of 1,000 pounds or more? How do the prices vary with the different counts? Lawrence (2420).

A manufacturer of elastic fabrics replies as follows:

Following is a list of prices fixed by all rubber thread makers. It applies to all purchases, large or small:

Size	per lb.
50s	$1.52
48s	1.50
46s	1.48
44s	1.46
42s	1.44
40s	1.42
38s	1.40
36s	1.38
34s	1.36
32s	1.34
30s and coarser	1.32

The prices quoted above are the November, 1914, quotations. Carnwood.

STAINING WORSTED YARN

Editor Textile World Record:

I want to stain worsted yarn a blue and a pink so that these shades will not fade on exposure to the light, but will wash out easily with soap and water. Can you give me a formula for such stains? Gosnold (2400).

The colors to select for the above purpose should be made from the group of direct dyes that do not stain wool. As to fastness to light, this is another matter and it is possible that "Gosnold" may not be able to secure just what he wants.

Diamine Fast Blue FFG, or Diamine Black BH, probably the latter in preference, may suffice for the blue, while Diamine Scarlet 8BF or Diamine Brilliant Rubine S may answer for the pink.

To apply these colors for the purpose indicated, they should be dissolved in warm water and diluted to the proper strength to give the depth of shade desired, and the worsted yarn worked in the bath for a sufficient time, squeezed, and without washing, allowed to dry without the aid of heat. Of course, no chemicals of any kind should be added to the solutions of dyes, as they would probably cause a distinct straining of the worsted. Berwick.

SECRECY IN MILLS

Editor Textile World Record:

I would like to know why there is so much secrecy among woolen and worsted manufacturers regarding processes and machinery used in their mills and the class of goods which they make. Stockton (2412).

The disposition to keep their manufacturing processes secret does not appear to be developed to an unusual degree among wool manufacturers in the United States, and certainly not to the extent that obtains in foreign countries. So far as the class of wool fabrics made in their mills is concerned, it is impossible for manufacturers to maintain any effective secrecy, because samples are easily obtained and by an analysis of the goods a man on the outside of a mill can determine the details of construction far more easily than by studying conditions inside. This is what makes it so important for every wool manufacturer to understand how to analyze fabrics. By that means a man can learn what his competitors are doing in all parts of the world. The best method of analyzing woven fabrics is the one known as the "straight line" system, and which we have repeatedly explained.

There are processes for which certain manufacturers of wool goods may have provided special appliances, or concerning which they have obtained special information. Such cases are, however, exceptional. As a rule wool manufacturers have little to conceal in connection with the machinery and processes employed in their mills.

Knitting Department

THE KNIT GOODS SITUATION

There is still a lack of ginger in the buying of hosiery and underwear, although the underwear manufacturers have had a fair business and the general feeling now is that prices have touched the lowest mark that they will reach for some time to come. A little more life in the buying would generally advance the present low prices.

A good many buyers like to wait until the last minute before operating. When prices advanced before they have bought, they use all sorts of excuses to get in at the old price and are very often successful, but this year they will find it harder work than usual owing to the fact that manufacturers have worked hard in most instances to make prices and merchandise look attractive and their work has been for the most part uphill. When the opportunity comes they will take all the advantage they can and hold firm to the new basis.

The only advances at the present writing are on wool and worsted goods. This was to be expected and if conditions in the wool market continue as at present, we will see further advances, otherwise some of the woolen garments will have so little wool in them that they will not even recognize themselves, there being a limit to the quantity a manufacturer can take out of a garment and still be proud of his product.

Manufacturers do not realize that in a good many cases they prove to be their own worst enemies. They have their associations and meetings and try to agree for instance on a time to open up their lines, but they do not agree as each one thinks that he may be able to steal a march on the other one and go out first. He is not away a day when his competitor not only knows of this fact, but also knows what his prices are. The buyer is not as much interested in the first man as he is liable to be a little later on when he knows what all are doing, especially in a tepid market like the present. Then again, what do they do? They take blanket orders subject to confirmation when the buyer comes to New York. He seems to forget, or does not appreciate, that his competitor also has a pocket full of these so-called "orders" and later on he has to do his work all over again. If it is a high market the same condition exists as the buyer does not want to pay the first man an advance. The first man out should have his expenses paid by his competitors who follow.

Lighter weights are being worn to a greater extent, not only by the women, but by the men and children. This naturally reduces the amount of business done by the manufacturer and jobber. The old heavy two piece woolen garments are gradually disappearing in most markets.

One of the surprising things in the underwear trade is, that California, where there are large users of the better classes of wool goods, uses so few union suits. The rest of the country is dropping one number at a time of two piece goods and adding to their union suit line. This is one of the reasons why two piece flat union suits are moving so slowly. For several years the cotton jersey overshirt was virtually out of the market on account of its high price, but this year sees it back again at $3.62 1/2. It will doubtless be welcomed by a good many who have been anxious to add it to their line as soon as it would be jobbed at $4.25 to $4.50.

J. & B. Allen are surprising the trade with a line of silk sweater coats of the best grades, such as formerly were imported from England. Ladies' light weight zephyr coats are coming to the front rapidly, such coats as formerly were knit at home to be worn under a heavier wrap. It may take the trade a little while to educate the smaller buyer to these coats, as he cannot appreciate the value of such a light weight garment.

One of the largest expenses that the job-

ber has to bear and which should be reduced, is the cost of carrying excess baggage. Sweater coats take up so much room that one trunk holds only a limited line. For this reason some of the jobbers have used photographs. If more of them would adopt this method, the retailer would soon get used to buying from photographs instead of insisting on the full sample. In view of the saving, the plan is well worth consideration. Samples could be carried on the first trip and photographs on succeeding trips. Photographs of sweaters are taken on live models and each photo has a six by six inch quality swatch attached. A full description is printed on each card. The cost naturally varies according to the size of the photograph and the number required, but the outside figure for a good sized picture is $1.00 for the original plate and ten cents for each plain print, such as an oxford coat, and twenty cents for each colored picture. These are tinted by hand. This expense may seem large at first, but when the cost of handling trunks every day and the loss on samples at the end of a season, the cost of photographs is very small in comparison.

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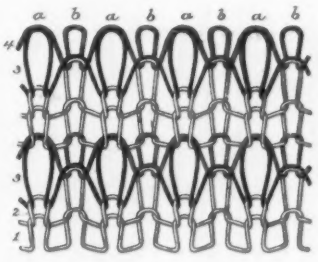
A NOVEL KNITTED FABRIC

The illustrations show a knit fabric recently patented and which is described as follows: The fabric, Fig. 1,, has two successive courses, 1 and 2, knit in ordinary rib stitch, and two following courses, 3 and 4, knit in full cardigan stitch, that is to say, the yarn in course, 3, forms full stitches in the wales, a, of the web and tuck stitches in alternating wales, b, while the yarn in course, 4, forms full stitches in the wales, b, and tuck stitches in the wales, a. These courses differ from the ordinary full cardigan stitch, in having abnormally long stitches in course, 3, in the wales, a, the result being the formation of eyelet holes in the web where these long stitches are drawn. This imparts a mesh effect to the web.

In the web shown in Fig. 1 the long stitches of course, 3, are formed in each of the wales, a, and separated by the shorter stitches in the two courses of plain ribbed web. The extent of separation of the long stitches in the direction of the wales can be changed by varying the number of intervening courses of short stitches. For example in Fig. 3 only one short stitch intervenes between the adjoining long stitches in each of the wales, a. The separation of the long stitches in the direction of the courses may also be varied by alternating any desired number of wales of plain ribbed web with the wales in which the elongated stitches are formed, as shown in Fig. 2. Instead of forming a full cardigan stitch in courses, 3

FIG. 1



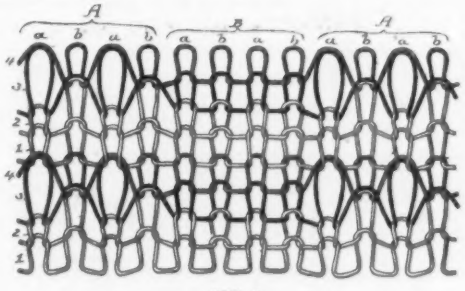


FIG. 2

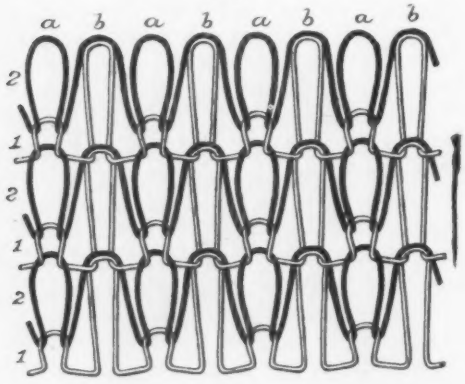
and 4, as in Fig. 1, a half cardigan stitch may be formed, as shown in Fig. 3, by alternating one or more courses of ordinary ribbed web as at 1, with a course, 2, in which the yarn is tucked upon alternate needles.

In knitting the web shown in Fig. 1 courses, 1 and 2, are knit upon both sets of needles of the machine, as in the ordinary method of producing ribbed fabric, Course 3 draws stitches on one set of needles, say the cylinder needles of the machine, and tucks on the other set or dial needles, while course 4 draws stitches on the dial needles and tucks upon the cylinder needles, the cyl-

inder needles in knitting course, 3, having abnormal draft so as to form the elongated stitches in the wales, a, in said course.

In knitting the web shown in Fig. 2, the cylinder needles in course 3 draw elongated stitches and the dial needles tuck throughout a certain width of the web, say that represented at A. Both sets of needles draw stitches throughout an intervening length of web, say that represented at B, and in knitting course, 4, the dial needles draw stitches

FIG. 3



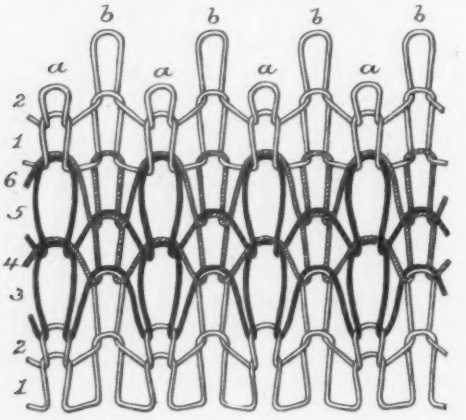


FIG. 4

and the cylinder needles tuck in producing the portion, A, of the web. Both sets of needles draw stitches in producing the portion, B, of the web.

In the web shown in Fig. 4 two courses of ribbed web, 1 and 2, alternate with four courses, 3, 4, 5 and 6, knit in full cardigan stitch, courses, 5 and 6, being the same as courses 3 and 4, so as to produce two of the elongated stitches in succession on the face of the web.

The fabrics shown in Figs. 1 and 2 are knit upon machines having four feeds, the fabric shown in Fig. 3 can be knit upon a machine having but two feeds. The knitting of the fabric shown in Fig. 4 will require a machine having six feeds.

STANDARD SIZES FOR TWO-PIECE UNDERWEAR

Following is the list of standard sizes for two-piece underwear which has been adopted by the Jobbers Association of Knit Goods Buyers. We are publishing it here in response to numerous inquiries for a standard list of this kind:

RIBBED

Infants'

Size mark—Age	A/0	B/1	C/1½	D/2	E/2½
Neck	9	10	10	11	11
Chest	14	15	16	17	18
Vest length	10	12	13	15	17
Sleeve length	7	8	9	10	11
Arm hole	7	7	8	8	9

Children's

Size mark—Age 2	2	4	6	8	10	12	14	16
Neck	11	12	13	13	14	14	15	15
Chest	18	18	19	20	21	22	24	26
Vest length	16	18	20	22	24	26	28	30
Sleeve length	11	12	13	15	16	17	18	19
Arm hole	9	10	11	12	13	14	15	15
Waist Bands	23	24	25	26	27	28	29	30
Hip	23	24	25	26	27	28	29	30
Thigh	11	12	12	13	13	14	15	16
Rise band to crotch front	7½	8	9	9½	10	10½	11½	12½
*Rise band to crotch back	9½	10	11	11½	13	13½	14½	15½
Inseam	13	15	17	20	22	24	26	27
Trunk	37	40	44	47	51	54	58	61

Women's

Size mark	34	36	38	40	42	44
Neck	16	16	17	17	18	18
Chest	26	28	30	32	34	36
Vest length	32	32	33	33	34	34
Sleeve length	20	20	20	20	20	20
Arm hole	16	16	18	18	20	20
Waist Bands	30	30	30	32	34	36
Hip	32	34	36	38	40	42
Thigh	18	19	20	21	22	23
Front rise	14	14	15	15	16	16
*Back rise	17	18	19	20	22	22
Inseam	27	27	27	28	28	28
Trunk	62	64	66	68	70	72

Boys'

Size mark—Age	6	8	10	12	14	16
Neck	13	13	14	14	15	15
Chest	20	21	21	22	24	26
Shirt length	20	22	24	26	28	30
Sleeve length	14	15	16	17	18	19

Arm hole	11	12	13	14	15	15	
Waist Bands	24	25	26	27	28	29	
Hip	24	25	26	27	28	29	
Thigh	10	12	13	14	15	15	
Front rise	9	9	10	11	11	12	
*Back rise	11	12	13	14	15	16	
Inseam	17	20	22	24	27	29	
Trunk	44	47	51	54	58	61	

Men's

Size mark	34	36	38	40	42	44	46
Neck	16	16	17	17	18	19	20
Chest	28	29	30	32	34	35	37
Shirt length	32	33	34	34	34	35	35
Sleeve length	20	21	22	22	23	23	23
Arm hole	16	16	16	17	18	19	20
Waist	30	32	34	36	38	40	42	44
Hip	30	30	31	32	34	35	37	39
Thigh	16	17	18	19	19	20	21	21
Front rise	13	13	13	14	14	14	15	15
*Back rise	17	17	18	19	19	20	20	21
Inseam	31	31	32	32	32	32	32	32
Trunk	62	62	64	66	67	68	69	70

FLAT

Children's

Size mark—Age	2	4	6	8	10	12	14	16
Neck	11	12	13	13	14	14	15	15
Chest	22	24	24	26	26	28	30	32
Vest length	15	17	19	21	23	25	27	29
Sleeve length	10	11	12	13	15	16	17	18
Arm hole	9	10	11	12	13	14	15	15
Waist Bands	23	24	25	26	27	28	29	30
Hip	23	24	25	27	29	32	34	36
Thigh	12	13	14	15	16	17	19	21
Rise band to crotch front	7½	8	9	9½	10	10½	11½	12½
*Rise band to crotch back	9½	10	11	11½	13	13½	14½	15½
Inseam	10	14	16	19	21	23	25	26
Trunk	37	40	44	47	51	54	58	61

Women's

Size mark	34	36	38	40	42	44
Neck	16	16	17	17	18	18
Chest	34	36	38	40	42	44
Vest length	30	30	31	31	32	32
Sleeve length	19	19	19	19	19	19
Arm hole	16	16	18	18	20	20
Waist Bands	30	30	30	32	34	36
Hip	40	42	44	47	50	53
Thigh	23	24	25	26	27	28
Front rise	14	14	15	15	16	16
*Back rise	17	18	19	20	22	22
Inseam	26	26	26	27	27	27
Trunk	62	64	66	68	70	72

Boys'

Size mark—Age	6	8	10	12	14	16
Neck	13	13	14	14	15	15
Chest	24	26	26	28	30	32
Shirt length	19	21	23	25	27	29
Sleeve length	13	14	15	16	17	18
Arm hole	11	12	13	14	15	15
Waist Bands	24	25	26	27	28	29
Hip	24	26	28	30	32	34
Thigh	14	15	16	17	18	19
Front rise	9	9	10	11	11	12
*Back rise	11	12	13	14	15	16
Inseam	16	19	21	23	26	28
Trunk	44	47	51	54	58	61

Men's

Size mark	34	36	38	40	42	44	46
Neck	16	16	17	17	18	19	20
Chest	34	36	38	40	42	44	46
Shirt length	31	32	33	33	33	34	34
Sleeve length	19	20	21	21	22	22	22
Arm hole	16	16	16	17	18	19	20
Waist	30	32	34	36	38	40	42	44
Hip	36	37	38	40	42	44	46	48
Thigh	20	21	22	23	24	25	26	26
Front rise	13	13	13	14	14	14	15	15
*Back rise	17	17	18	19	19	20	20	21
Inseam	30	30	31	31	31	31	31	31
Trunk	62	64	66	67	68	69	70	

*Where the front and back of pants are made alike they must both be the length of the back rise as here given, and not one-half the sum of the front and back.

Sizes on the rib scale are based on 1 by 1 stitch goods of winter weight and a stretch of 25 per cent. in width is allowed. This allowance may be increased up to 30 per cent. as the goods run lighter in weight, or decreased with more rigid fabrics.

"Waist band" is measurement of garment when buttoned

FANCY KNITTING

BY TRENTON

The muffler, a strip of fancy knit stitches with a plain collar, that was much in evidence a few years ago, had as many different styles of stitches as a knit necktie. Fig.

FIG. 1

1 shows a double tuck stitch with plain neck piece. This style was made on a four or five inch cylinder with chain attachment to change from tuck to plain and also to cast off the stitches and hold for the tuck. There was no idler wheel on the chain drum so the chain moved one link with each revolution of the frame. On a double tuck, two low links were used, one high link to cast off and repeat to the length wanted. Naturally

the neck was all high because it was all plain. This style of frame had only one chain and one cam lever, connected with both cams and reversing instantly, leaving no change marks as in the old style machines. This is a maroon muffler made of No. 12 cotton yarn knit very loosely, but holding its shape well. The clasp used to hold it closed is the glove style of button-snap clasp.

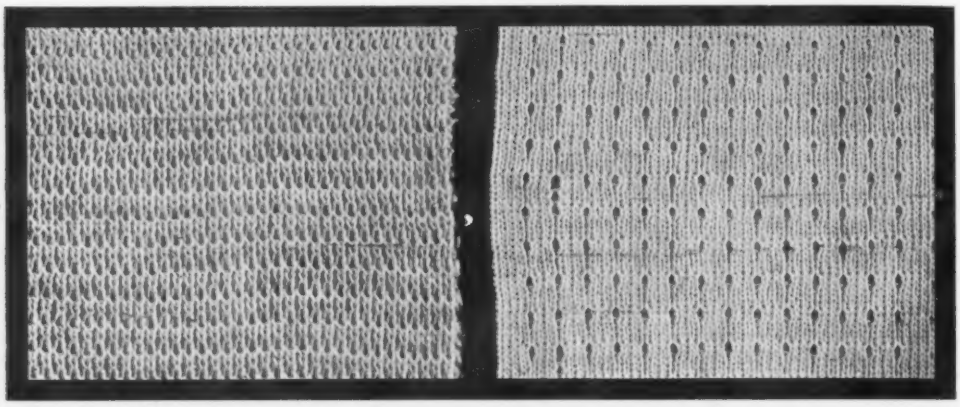


FIG. 2

Fig. 2 is also a muffler pattern. It was a scarf and the pattern used was one that was largely used on the old time sweaters. It would stretch double its width. The pattern was three tuck, one plain. The tuck stitches were made by not drawing back on the dial cams, letting three stitches collect before the case-off. This was done to relieve the strain as the old style of tuck would sometimes pull holes or break the yarn at the farthest point back. There was no plain stitch in this style, but a variety of colors could be used to good advantage.

FIG. 3

Fig. 3 is a long latch needle pattern. A glance at it will bring to mind the advertising stunts it took to get it on the market. Our factory ran night and day for some time. This cloth was made up into separate garments, vests and pants for ladies and children only. A long latch dial needle was used at every third needle and the cams were ground to hold long latches only. These ground cams were the push out cams that held the needles out at the farthest point un-

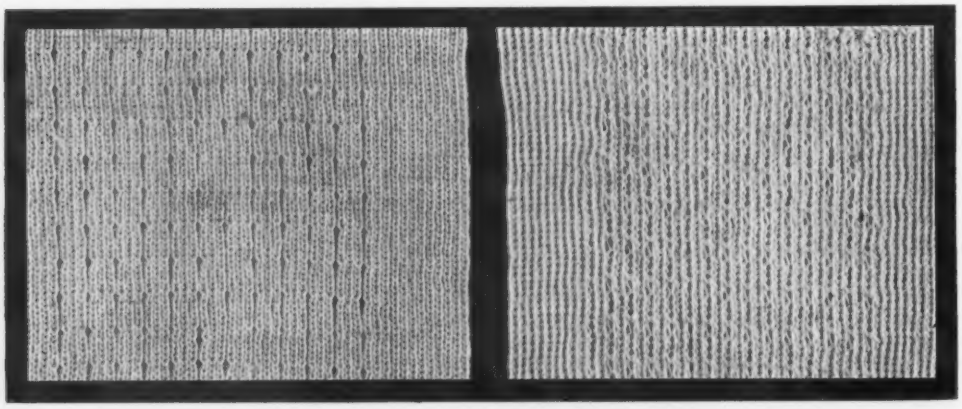


FIG. 4

FIG. 5

der the yarn guide. The regular needle would push out far enough to clear the latch, but would not clear the long latch. Each long latch held two stitches, therefore two cams were ground unless the style of frame had an adjustable cam stud.

Fig. 4 is the same as Fig. 3 with the exception that it holds one tuck stitch at a time for one revolution of the frame. This was almost a standard pattern at one time in children's garments. This pattern was made both plain and shaped and in colors.

Fig. 5 is the same as Fig. 3 with the dial needle out between the long latch needles.

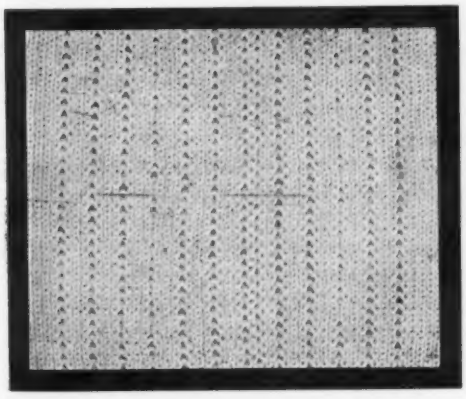


FIG. 8

Fig. 6 is an old favorite in the Swiss ribbed line. This has a long latch effect, every other dial needle being a long latch, with two tuck and two plain stitches. There were generally four to six bars of this stitch in the front of a garment, each bar being about four needles in width. When finished the bars gave an attractive, raised stitch appearance.

Fig. 7 is a ladies' light weight vest which was very popular made with a V neck and no sleeves. Has a long latch two tuck, two plain stitches, every other cylinder needle out between the two regular dial needles. A great variety of patterns can be made from this set up, either by changing colors or arrangment of tuck cams. Care must be taken to draw lightly on both take-up and stitches.

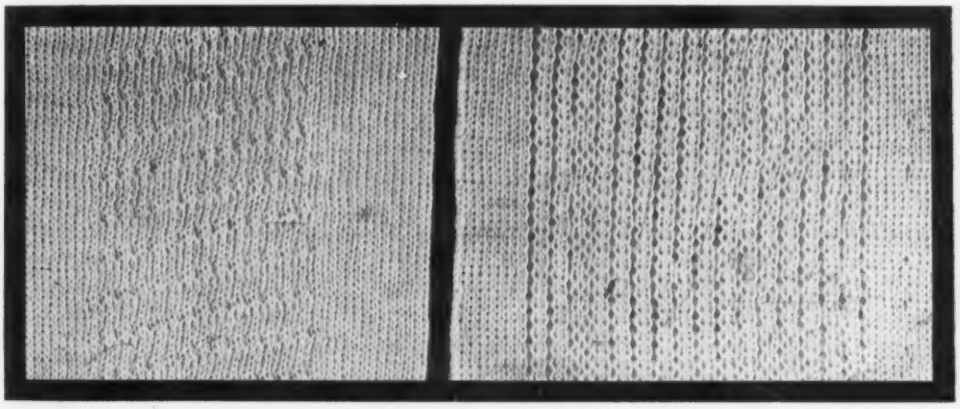


FIG. 6 FIG. 7

Fig. 8 shows a fabric with every third dial needle a long latch, with the needle out between. This stitch is sometimes called the chain stitch and is used for many purposes. Cut certain lengths and doubled lengthways it can be used for a collarette or doubled and used for cuffs. This can be made up in colors.

A recent style of ladies' high grade sweater is like that shown at Fig. 6. There are two colors in the body, the main color showing more prominent and the inside color showing only in the long last tuck stitch, giving a dash of color different from the body color.

Any number of combinations can be worked out with long latch needles in connection with color yarn and spacing the long latches.

A CIRCULAR KNITTING MACHINE

The illustrations show the construction of a circular knitting machine recently patented in this country and which is described as follows:

The object of the improvement is to enable the gage of the stitches drawn by the needles of a circular knitting machine to be increased to a greater or less extent in a portion of any course without increasing the gage of the stitch drawn by other needles in the same course.

The device may be used for increasing the gage of the stitch drawn by a portion of the needles of a circular series, for the purpose of facilitating the introduction of a reinforcing thread, or for accommodating a thicker yarn in a portion of the stocking, both without increasing the length of the fabric containing the reinforcing or thicker yarn. It can also be employed for the purpose of increasing the gage of a portion of the stitches in a course or courses beyond the extent necessary to accommodate a reinforcing yarn or a thicker yarn, for the purpose of making a portion of the resulting fabric containing such stitches of increased gage longer and wider than the portion of the fabric formed by the other portions of corresponding courses, the stitches of which the not increased in gage, as for example, in the sole portion of a stocking, and in the heel and toe portions thereof. The improvement also finds an additional use for increasing the gage of stitches at any part of the course or courses or at several different points in a course for any such purpose for which a stitch of increased gage may be desirable.

Fig. 1 shows part of a knitting machine embodying the improvement. Fig. 2 is a top plan of the parts shown in Fig. 1.

Means are provided for increasing the gage of certain stitches in a course by raising the sinkers located adjacent to the needles on which the stitches of increased gage are to be formed, thereby this causes the needles to draw stitches of increased gage between the sinkers so elevated.

The needles, 2, of the circular series are adapted to reciprocate vertically and provided with a nib, 3, for engaging the knitting cam, 26. Relative circular movement is provided between the needle cylinder and the knitting cam in any desired or usual manner to effect the vertical movements of the needles for the production of a circular course of stitches by rotating the cylinder with respect to the cam or by rotating the cam with respect to the cylinder. The sinkers, 4, are located between adjacent needles

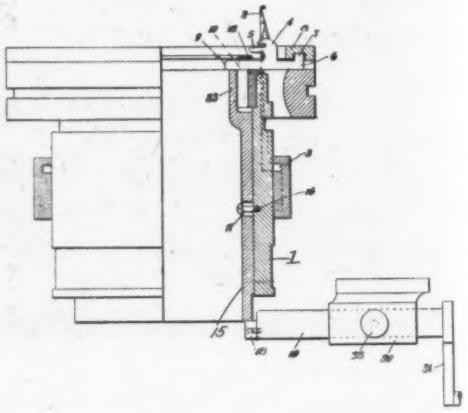


FIG. 1

and provided with shoulders, 5, for supporting the work, the length or gage of the stitches being determined by the distance below the shoulder, 5, to which the hook of the needle is drawn down by the knitting cam.

The sinkers in this instance are provided with horizontal guiding portions, 6, extending inwardly and also outwardly with respect to the axis of the knitting cylinder, from the main or vertically disposed portion of the sinker, the outwardly extending portion being provided with a nib, 7, which is engaged by a horizontal ring, 8, provided with a cam groove to engage the nibs, 7, and impart the desired horizontal movement to the sinkers.

Where the cam ring is employed there will be a relative movement between the cylinder and ring corresponding to the relative movement between the cylinder and the knitting cam, which may be accomplished by rotating or reciprocating the cylinder with respect

to the ring, 8, or by rotating or reciprocating the ring with respect to the cylinder. The sinkers adjacent to the needles which are to draw the stitches of greater or increased gage have their horizontal portions provided with extensions, 9, projecting inwardly toward the center as shown in Fig. 1. The sinkers adjacent to the needles which are to draw the normal stitch at all times are not provided with such extensions, as indicated by the dotted line 10 in Fig. 1. Each of the sinkers provided with the extension, 9, is so arranged as to be capable of a slight vertical movement with respect to the needle cylinder, 1. For convenience in assembling the parts sinkers are provided with a notch, 11, for engaging the sinker retaining ring, 12, of increased vertical width over the width of the corresponding notch of the ordinary sinkers, to permit the vertical movement of the sinkers having the inward extending projections, 9. All of the sinkers may be constructed alike in respect of the retaining recess, 11, if desired, as the sinkers which are not raised will be held in their lowest position by the downward pull of the needle and of the work. As shown in Fig. 1, a vertically movable adjusting sleeve, 15, is provided within the cylinder. A vertical movement may be imparted to the sleeve, 15, as shown in Figs. 1 and 2. The adjustment is made either by hand, in which case the rock shaft, 19, may be locked in its adjusted position by means of a set screw, 22, or the rock shaft may be operated by the pattern mechanism of the machine, which may be operatively connected with the lever, 21.

The upper end of the sleeve, 15, is provided with a cylindrical portion, 23, of less diameter than the cylinder the upper end of which engages the inwardly projecting extensions, 9, of those sinkers adjacent to the needles, the stitches of which are to be increased in gage. When the sleeve, 15, is moved upward a greater or less extent the sinkers whose projections, 9, overlie the portion, 23, of the sleeve will be correspondingly elevated and the stitches drawn by the adjacent needles will be increased in gage a greater or less extent corresponding to the amount of movement imparted to the sleeve, 15. Assuming that the stitches of the rear half of the stocking corresponding to the highspliced portion, the heel portion, the sole portion, and the toe portion thereof, are to be increased in gage during the knitting of the corresponding portion of the stocking, it is only necessary to provide those needles which knit the rear half of the stocking with sinkers having inwardly projecting exten-

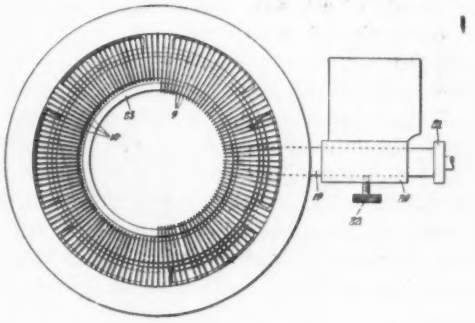


FIG. 2

sions, 9, and to operate the adjusting sleeve, 15, at the desired time and to the desired extent to secure the results desired. The sleeve, 15, can be elevated slightly while the high spliced portion above the heel is being knit to facilitate the insertion of a reinforcing thread in that portion of the stocking without increasing the length of the resulting fabric beyond that of the corresponding courses on the front of the leg.

When the heel is knit the sleeve, 15, can be raised to a greater extent to facilitate the insertion of a heavier reinforcing thread, or the use of a still thicker knitting thread for the production of a heavy heel. When the sole is knit, the sleeve, 15, can be elevated sufficiently to positively increase the length of the fabric beyond the length of the corresponding fabric of the top of the foot, and at the same time to permit a reinforcing thread to be inserted or a heavier knitting thread to be used. In knitting the toe the adjustment of the sleeve, 15, may be made to facilitate the insertion of a reinforcing thread of the desired weight or the use of a heavier knitting thread.

FLEECED LINED KNIT GOODS

BY GLENCAR

The original fleece lined underwear was a regular fabric brushed or napped on the inside, leaving a soft, fuzzy nap, raised slightly above the body of the garment. This applied to both spring and latch needle frames. Later a device was added to the spring needle loop wheel machine that would form a loop on the inside of the fabric. This loop was made of a heavy, soft yarn; in fact was an extra thread added to give weight and body to the regular finished goods. This loop could be regulated for a light or heavy back and was in reality a balbriggan garment with a fleeced back. A roll of goods with the loops turned outside was run through a machine called a napper, and the extra back thread was brushed by wire rolls at high speed. These wires pulled the loops apart, leaving a soft, fluffy surface, the thickness of which depended on the length of the loop.

The finish of the garment was no different from that of the ordinary garment, being generally a bound neck with three buttons, covered seams and a turned or bound bottom. The cuffs were the ordinary straight tubular fabric doubled, knit on a four or five inch sleever. This style of garment was very popular for a few years, but soon died out. Next came the latch needle fleece. This was made in all styles for men, women and children. This also had an extra thread for the back which formed a loop, but was tied to each stitch and could not be pulled flat. One style of machine formed the loop with what is called a sinker. These sinkers were in an extra cylinder on the dial and worked from a set of cams, similar to the needles. Each sinker engaged the backing thread, pushing downward to the length of loop desired, holding the loop until both dial and cylinder stitch had been formed. It then skipped a stitch, or in other words, every other feed made a loop.

The sleeve machines were also equipped for fleecing, with a plain cuff. Most of these garments were shaped, that is, tuck and plain stitch. The finish was more fancy and more expensive than the men's goods. A lace neck, with lace edging down the front, all edging or edging neck and a bound front. Nearly all were finished with three buttons, covered seams and plain bottom. The pants were finished the same as the regular knit garment. A number of styles were made such as plain white, silver, natural and Egyptian cotton. Next came the new napper on which was a device that would turn the goods on the top of the napper, the goods going through twice, turning themselves and returning on the unfinished side to go through twice and fold themselves in a small pile in front of machine.

Another style of fleece was made by a hook that drew the loop through the needles, after the style of the sinkers from the dial. This hook was run from the cylinder cams, every other cylinder slot having a hook. As a result the cylinder was cut twice to the dial once. In other words, both dial and cylinder had all the needles, but an extra cut was made for the hooks to draw the backing loop. This frame could be changed instantly to regular work, and could hardly be noticed from the ordinary ribbed machine.

A device was used on a machine to nap the goods as fast as they were knitted. There was nothing unusual about the machine itself, no device for extra yarn or a backing loop. Instead a soft yarn was used on every other feed, with the plain stitch on the shaped goods. This device was a cylinder, similar to the regular latch needle cylinder, attached to the dial stud. This cylinder was about two or three inches smaller than the cylinder in the frame and covered with a stiff, sharp, wire card clothing. The fabric as fast as knitted was stretched over this wire and as the frame revolved, the wire brushed the soft yarn and left a sort of fleece. All sorts of trouble arose with this device as it pulled the goods out of shape, made a small hole larger, ran a single drop stitch for a yard and proved to be of no value until a double brush was put on the reverse of the other. This was accomplished by a gear arrangement on the cylinder itself. This attachment was used for a

time, but the fleece did not prove satisfactory and it was discarded.

No fleece lined goods are washed after napping. Even steaming the finished goods in the boarding room left bunches, or a sort of knot that would not soften. After washing a few times the fleeced lined garment began to feel hard and the uneven bunches were very uncomfortable. One winter's wear would generally take off the nap and leave a light weight summer garment. Some years ago the mills of the Mohawk Valley ran night and day on this spring needle fleece work, but the craze died out and very few of these garments are made today.

The finish on the goods differed very little from the finish of the goods today. The same finishing machines were used and with the single exception of boarding, all the operations were employed. The fleeced goods of today are generally the regular run of the mill, fleeced or not as the buyer desires, for it is only a question of running the goods through a napping machine.

AN IMPROVED STOCKING

An improved stocking designed to form the knee portion so that it will conform to the knee of the wearer has recently been patented in this country. The inventor describes it as follows: Fig. 1 is a side view of the stocking, Fig. 2 shows how the additional courses are added to the knee portion; Fig. 3 is a section through the knee portion showing how the thread that forms the extra courses is carried from one extra course to the next.

The portions, 7 and 8,, extend about half way around the knee and join at the seams, 9. The location of the seams can be varied as desired, provided that the portion, 7, is of sufficient length and width to cover the knee of the wearer. In knitting the stocking from the top, the knitting is begun and carried on in the usual manner and the part, 5, is formed as in an ordinary stocking until a point is reached just above the knee.

A course is knit running entirely around the stocking with the thread, 10, with which the portion, 5, has been knit and then an extra thread, 11, is thrown in and a course knit across the portion, 7. When it reaches the end of this portion this thread is suppressed and floated across the inside of the stocking while the knitting is continued around with the thread, 10. When the seam, 9, is again reached, the extra thread, 11, is again thrown in and the operation continued until a point below the knee is reached when the extra thread is cut off and the stocking finished in the ordinary manner. Then the

FIG. 3

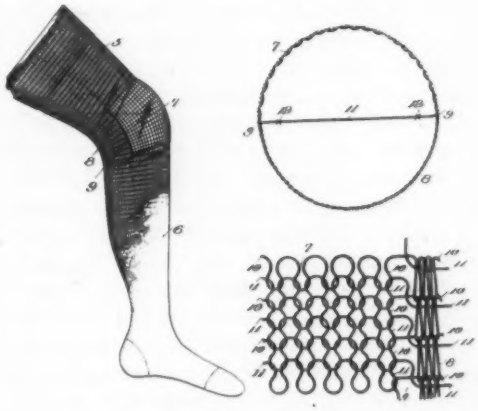


FIG. 1 FIG. 2

portions of the thread, 11, which had been floated across are cut off as indicated at the marks, 12, and the stocking is complete.

There are twice as many courses of stitches in the portion, 7, as there are in the portion, 8. When the stocking is taken at its ends and stretched taut the stitches in the portion, 8, will be drawn out into long narrow loops without, however, drawing out the stitches in the portion, 8, as illustrated in Fig. 2. As a result, when the stocking is worn the knee may be bent without putting undue tension on the knee portion.

The most notable date in the history of hosiery is the year 1589, when William Lee, M. A., St. John's College, Cambridge, a native of Calverton, freeholder and curate of the parish, brought his invention of a knitting machine before the world as a practical instrument of production.

Dyeing, Bleaching, Finishing, Etc.

MODERN MORDANT DYEING

BY CHROMIUM

With the supplanting of natural dyes by direct synthetic colors, the necessity for mordants was done away with, as single bath methods were boomed all over the country and anyone using the two-bath method was at once put down as a back number. The bringing out of the chromotrope dyes, however, changed all this, and those well-known mordants, the bichromates are now used in larger quantities for developing than ever they were as ground mordants. Excellent and easy to apply as the acid colors are, yet they rank a long way behind those developed on the fiber, both in fastness to light as well as milling, poting and decatizing and in my opinion a big future is in front for after-developed dyes on all classes of material. In the future it may be possible to apply indigo and the newly discovered vat dyes in the same manner, that is, by impregnating the goods with the half-made colors when in solution and completing the formation of the dye upon the fiber itself. Familiar instances of this are seen in the diazo dyes, oxidized aniline black, the ancient prussiate or royal blues and many others, while in view of the strides color chemistry has made lately, he is a bold man who uses the word "impossible."

Very few fast coloring matters have the property of fixing themselves on the fiber without the intervention of a mordant, particularly so in the case of cotton and linen and oxidized aniline black being exceptions with now the addition of the sulphur dyes for cotton. Using the salts of the bichromates as developers is hardly justified in coming under the head of mordanting, as the chrome acts simply as a powerful oxidizer of the color, and in no way enters into combination with the dye the same as it does with the alizarines. For this reason, although a few after-developed dyes can be dyed on a chrome bottom, the result is not nearly so successful as giving the chrome afterwards. The reason for this is very plain. As deposited on the material a chrome mordant retains very little of its oxidizing powers, and practically none if reduced dozen to the sesquioxide stage by means of tartar or oxalic acid. If, however, a chrome mordant be applied to wool without any assistants in the bath, the deposited chrome will contain higher oxides as seen by the color, which will be yellow rather than green. In this stage it retains considerable oxidizing powers, and is frequently used for dyeing logwood colors (blues and clarets), where the dyeware is new, or short of maturity.

In addition to fastening the dye, a number of mordants modify it by their own color showing up through the dyestuff, and so limits their use to darker or saddened shades. A good mordant should possess the property of being easily soluble during its application, and also of being changed into the insoluble stage after entering the cells of the fibers, in addition to having a strong affinity for the dye, and a maximum of self color.

Mordants for animal fibers consist mostly of metallic salts which on boiling deposit their oxides, while a few, acetate of alumina for example, are assisted in this by the volatile nature of their acid which boils off. It will be seen that a mordant must not be too stable; that is, it must be readily decomposed on boiling so as to fasten quickly, while a number of other agents which are not in themselves mordants, are frequently added for the purpose of assisting decomposition. Well-known assistants for the object named are argols, white tartar, lactic, oxalic and formic acids, which react upon the mordant to form secondary salts which are much easier broken up. Oldest of all the mordants is that of alum, rarely used now as the common alum salt, but commonly enough in calico printing as the acetate or red liquor.

Goods mordanted with alum require extra boiling, as the alumina is not deposited unless a high temperature is kept up, so that this renders the common alum of little avail for cottons, which are mostly dyed cold, while the bichromates of potash or soda have knocked it quite out for woolens. Common alum, the double sulphate of potash and alumina, has the peculiar property of being alkaline in a very weak solution and acid in a more concentrated one. It combines with all the acid colors, precipitating them as alum lakes, but is of no use as a mordant where the dye is a neutral salt, as are the bulk of the coal tar dyes. Sulphate of alumina, $Al_2(SO_4)_3$, is used yet by some woolen dyers, and being richer in alumina than alum is also more readily dissolved, but often contains salts of iron from impurities in the manufacture.

Red liquor or acetate of alumina was formerly made by mixing equivalent solutions of alum and brown sugar of lead. On this being done, mutual decomposition ensues, the lead changing to the sulphate and precipitating, while the alumina now combined with acetate acid remains in solution. The name of red liquor is got by the color of the crude acetic acid, which contains many pyroligneous bodies of a tarry nature, but as the mordant readily parts with its voldite acid on being aged, it is still extensively used in calico printing. Tartar is frequently used along with alum mordants, forming tartrates which decompose much sooner than alum alone, while tannic acid, silicate of soda, and arsenate of soda have all the property of fixing alum on the fiber as insoluble alumina.

Next in point of age comes the salts of iron, a mordant still used in Eastern countries and also by a few cotton dyers for the wood dyes, but largely by dyers of cotton warps and for burl dyeing. All the early logwood blacks upon wool were mordanted with iron, and the combination of this with logwood gave a remarkably fast, but rather rusty black. The three forms in which iron salts are used as mordants are, copperas, which is principally used for blacks upon silk, pyrolignite or crude acetate, frequently terms black liquor, and nitrate of iron.

Black liquid is extensively used in cotton printing, while the so-called nitrates of iron are used on a large scale for dyeing the warps of cotton and wool unions. Used along with myrobalans, nitrate of iron gives a black on white cotton warps which is far ahead of any black known, as the shade is full and jetty, while the goods themselves feed up very considerably by the deposit of iron tannate. When a union cloth dyed by one of the many cotton blacks is compared with one dyed by the old method of iron and myrobalans, the marked difference is seen at once. That dyed by a synthetic black is poor and flabby, as none of the tar dyes have any feeding capabilities, while the tannin black is thicker, heavier and richer in tone altogether. Cost is, of course, greater by the nitrate process, as it means running the goods six to eight hours in alternate cold baths of myrobalans and iron, rinsing off between each bath with cold water or the constituents of the next bath would be wasted. For heavy low-grade unions no better machine has been found for coton dyeing than the ordinary washer, its action is superior to the jigger as the heavy rollers give a penetration which leaves the jigger far behind, while the rinsing is also done quicker and more effectively. Most of the so-called nitrates of iron are actually sulphates (ferric salts) and are made by dissolving copperas in nitric acid. In making these, a slight excess of copperas is beneficial in nitrates intended for dyeing blacks, as it gives a bluer shade and corrects the rusty tone which a nitrate composed of all ferric salts is apt to produce. It is necessary to be careful in making these nitrates not to permit any excess of acid to be present, as in addition to imparting a red shade to the black there is a great risk in tendering the goods, particularly in printed and aged material. For a few special purposes an actual nitrate of iron is made by acting upon scrap iron with nitric acid, in which case there cannot, of course, be any ferrous salts present. Should an excess of iron over the acid be present, the latter is "over killed," as it is termed, in which case a fault of another description is

likly to occur, that is, the mordant goes on too quickly, resulting in uneven patches and rusty marks developing.

The addition of sugar of lead to nitrates of iron reduces its acidity and lessens the danger of the material becoming tendered, as the lead displaces some of the sulphuric acid and forms a precipitate with it, leaving the much milder acetic acid in its place.

Iron mordants were essential for dyeing the royal or prussiate blues which were so well known at one time, and are used today for the weighting of black silks by the passage through alternate baths of iron and tannin.

Lead mordants. Although the salts of lead readily combine with mordant dyes, and form insoluble lakes similar to those of alum and tin, they only give dull, flat colors totally devoid of the rich and brilliant shades of the alum lakes. Besides having very little affinity for textile fibers, lead salts have the serious drawback of turning black by the action of sulphur. Even the small per cent. of sulphur naturally present in the wool fiber will effect this, while the outside risk of blackening is very great, considering the prevalence of sulphur in illuminating gas and the air of all big cities. Beyond being used as raw material for the making of acetate of alumina and iron, lead acetate has few uses in the dyehouse, the only other salts of it which are of use being the plumbate of soda for printing chrome yellows and oranges on cotton, and to a small extent nitrate of lead for the same purpose.

Copper mordants are of much more importance and in addition to their use as cotton mordants for logwood blacks and oxidized aniline black, they are used for after coppering many of the synthetic dyes to increase their fastness to light. Bluestone or copper sulphate is the usual mordant used, although many Continental dyers employ verdigris, or copper acetate in place of it, and make it similar to the method used for red liquor, by the mutual decomposition of copper sulphate and sugar of lead. All salts of copper have powerful oxidizing properties, and on this account are used for resists for vat blues and other colors. On some materials copper salts exert a very dangerous influence, notably on fabrics which are afterwards proofed with rubber. This is accounted for by copper being a strong catylatic agent, small quantities of which will act as oxygen carries from the air to the cells of the impregnated fabric, and rubber is at all times given to slow internal decomposition. Chrome salts in the form of the bichromates are well known and used everywhere, but it is not always remembered in using them that chromic acid is very sensitive to light, and direct sunshine acting upon newly chromed cloth has been the cause of many stains forming. Titanium salts would be much more used if the price was not so prohibitive, as they have many good qualities for dyeing bright shades, and will work either alone or with fluoride of chrone, but they require the use of 4 to 6 per cent. oxalic acid as an assistant. The double salt of titanium potassium oxalate has been found to answer best for mordanting purposes, using for dark shades 3 to 5 per cent. and from 1 1/2 to 2 1/2 per cent. for light ones, while titanous sulphate and chloride form good stripping agents if only the price was lower.

THE THIES SYSTEM OF BLEACHING PIECE GOODS

The Thies process for bleaching piece goods was invented in Germany where it is in extensive and successful use. It is now controlled by the Zittau Engineering Works, Zittau, Saxony. A. W. Buhlmann, 200 Fifth Ave., New York, is the sole American agent.

The Thies bleaching apparatus shown at Fig. 1 consists of an upper funnel shaped vessel or hopper, suspended from above in a universal swivel, into which the rope enters, and of the lower part composed of several members of copper tube and joined to slide into each other like a telescope. When drawn out, it is shaped something like an elephant's trunk. The mouth piece is provided with handles and the whole is balanced so as to slide easily to and remain at any desired height. The universal swivel in

which the hopper is suspended allows of an oscillating movement in every direction. The goods taking their way through the plaiter may be easily stowed into any vessel, regardless of the shape, with a uniformity when packing along the walls, in the corners or in the center, which cannot be accomplished by hand. The material passes over a drum and is washed into the hopper with a flow of liquor which is pumped into the apparatus, and the tight

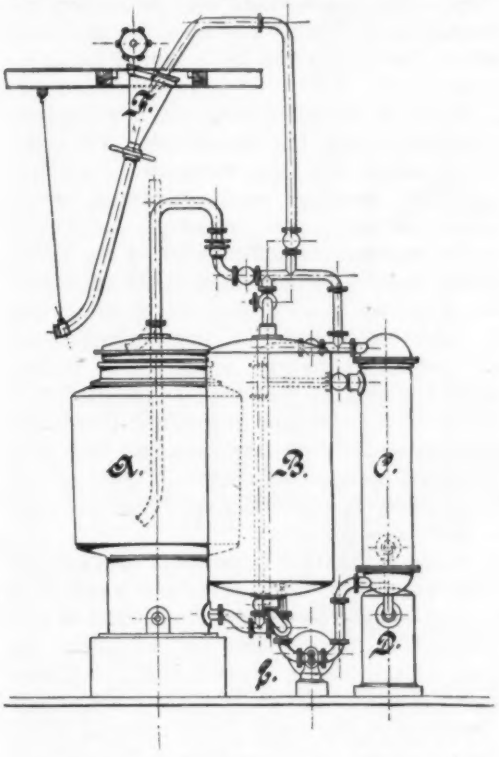


FIG. I. THE THIES APPARATUS FOR BLEACHING PIECE GOODS

packing is assisted by an air pump connected to the bottom of the vessel.

The apparatus enables the filling and tight packing of the goods into kiers, vats, boilers, souring or chloring tanks, trucks for horizontal kiers and vessels of all kinds, without the workman getting into the receptacle. While two or more workmen were necessary to do the work in the old way, with this apparatus it is done by one operative, who may be a boy or youth standing on the platform around the kier and directing the mouthpiece as required.

It is evident that the degree of uniformity and the tightness of the packing obtained in this way can never be reached by manual labor. The bleaching is thus made independent of the workman. Any unevenness in the stowing and packing which may be resulting from the workman having remained too long a time in the same place, is avoided. Packing by hand along the walls requires special skill and judgment. If the work is done carelessly, the lye frequently makes its way along the walls of the vessel where it finds less resistance, leaving the material untouched, and as a result the goods show stains.

In order to ensure an even and thorough bleach of the entire load by the old method, the boiling has to be greatly extended. By working with the Thies plaiter, the boiling process takes much less time, consequently uses less chemicals, and less harm is done to the fiber. Unboiled places in the load, stained and streaky goods do not occur. The flow of liquor falling into the kier from a considerable height at the same time with the cloth, effectually envelops the latter, completely saturating it and expelling the air. The removal of the air is assisted by the air pump connected to the bottom of the tank. The chemical action of the dissolving liquor commences with the charging of the apparatus. The charging takes much less time, goods cannot get entangled. When the boiling is completed the goods can be very promptly unloaded.

The mechanical plaiter ensures an even and thorough boil of the cloth in the bleaching, absence of stains, reduces the consumption of steam and chemicals, saves time and reduces the cost. The apparatus is guaranteed to be in all its parts, of the best material and workmanship.

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The average weight of a bale of Argentine wool is about 910 lbs. The average for Uruguayan wool is about 1,000 lbs. Both these weights are considerably more than that of an Australian bale, for which last year the average was 327 lbs., that for the previous eight years being 333 lbs.

AN IMPROVED DYEING MACHINE

The illustration shows an improved cylinder for yarn dyeing machines, and which has recently been patented in this country. The object is to obtain a cylinder of large capacity which combines lightness, strength and a low cost. Fig. 1 is a vertical section of the spool shown in the position it occu-

FIG. 1

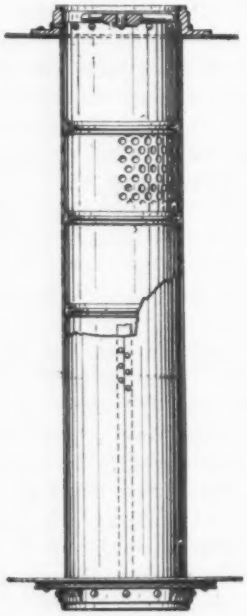
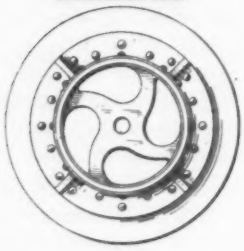


FIG. 2



pies during the dyeing process. Fig. 2 is a view of the end of the cylinder. A sheet of perforated metal of a nature suitable to the process in which it is to be used, is bent to form a cylindrical shell. Some of the perforations which are formed all over it are shown. Inside this shell at suitable distances apart are supporting rings which closely fit into the shell and are riveted to it. Such rings may have any convenient form in cross section, but the form shown in Fig. 1 is generally suitable.

Near to each end of the cylindrical shell is placed a flat ring of the special metal closely fitting around the shell. These rings are the flanges of the beam. To hold them securely in place and to give sufficient strength to them, angle rings of sufficient solidity are riveted to the ends of the shell and have the rings or flanges also riveted to them. The angle rings may be formed integrally with spokes and hubs, by means of which the beams can be mounted for rotation.

When in use for dyeing the beam stands vertically within the dyeing vat. The edge of the angle ring beds upon an indiarubber or other packing washer through which passes an inlet pipe to admit dye liquor under pressure to the interior of the cylindrical shell. The upper end of the shell may be closed by a cap fitting over it which cap is subjected to external screw pressure to not only hold the cap in place, but also to press the ring at the lower end of the shell firmly on its seat and to retain it there. In a modified form of beam one end only may have the spokes or equivalent openings to permit flow of liquor and the other end may be permanently closed.

It is essential that those parts of the beam with which the yarns or fabrics come into contact should be of a material that is not affected by the dye and will not affect the yarn or the like in contact with it. Those parts of the beam which do not come into contact with yarn may be of cheaper metal such as iron. For bleaching it is preferred to form all parts of the beam of the special suitable metal. In this case each ring or flange may be formed in a single piece with the supporting member. The seam along the cylinder shell where the edges of the perforated sheet are brought together may be secured by a metal strip laid along it in the interior of the shell.

The quantity of silk cocoons produced in Spain is estimated at 2,105,400 lbs. annually, valued at $910,000.

THE KUEHN BLEACHING APPARATUS FOR COTTON

The illustration shows the improved apparatus for purifying and bleaching cotton which has been invented and perfected by Alfred Kuehn, Leipzig, Germany, and for which Alfred Suter, 200 Fifth Ave., New York, is the sole American agents. The in the same machine and removed to be hydro-extracted and dried. As the natural fat and wax of the fiber is not extracted by this process the spinning qualities of the material are not injured and a clear white is obtained. The loss of weight is very small, American cotton losing about 3 per cent and East India about 5.4 per cent.

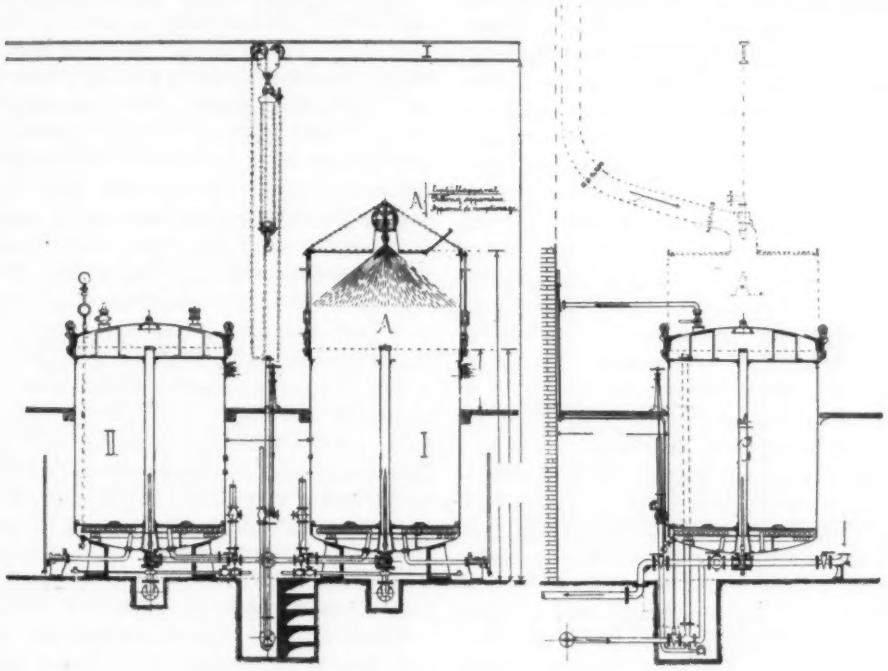


FIG. 1 FIG. 2

THE KUEHN APPARATUS FOR PURIFYING AND BLEACHING COTTON

Kuehn apparatus has been in successful operation in Europe and this country for several years, and embodies a number of improvements. The process employed either in warm bleaching with boiling or cold bleaching without boiling or steaming. It is suited for bleaching raw cotton, wool waste, card sliver, slubbings and roving, yarn in the form of hanks, cops, cheeses or warps on the beam, also cotton waste.

The cold bleaching process avoids the production of pure cellulose and bleaches the fiber without altering its physical structure. The material enters direct into the bleaching apparatus where it is subjected to the process for 1 to 1 1/2 hours. It is then washed

The bleaching material consists of a peculiar combination of hypochlorites of alkalies and oil preparations, with the characteristic peculiarity of rapid moistening and capillarizing, so that the bleaching liquor not only touches the surface of the fiber, but in a very short time penetrates into the finest pores and hollow spaces, in which the colored impurities of the fiber are chiefly situated, serving also as a conductor of oxygen and affecting thereby an energetic oxidation of the impurities under an absolute management of the fiber. On account of the excellent capillary action of the bleaching liquor and the simplicity of the process, no complicated apparatus, such as a vacuum-appara-

tus, is necessary, one man only being required to attend to a complete installation of two or more machines, each of them producing about four charges of ninety to two hundred pounds each per day of ten working hours.

The Kuehn warm bleaching process also gives a clear white product by a simple operation and at a low cost for material and labor. The raw material is first mechanically cleaned in the usual way by willowing, etc., and is then blown through a trunk into a specially constructed boiling kier, which is fitted with a special filling or depositing apparatus consisting of a sprinkler arrangement producing a shower of spray which meets the floculent cotton as it enters, rapidly penetrates and moistens it, causing it to deposit itself upon the perforated false bottom of the kier. The surplus liquid flows back to the reservoir containing the spraying liquor, which is continually circulated through the spray diffuser by means of a special circulating apparatus, the rate of circulation being easily regulated.

In this way 2,000 pounds of raw cotton may be automatically loaded in one-half hour, being wet down and reduced in volume to such an extent that it may be continued in a kier about 6 feet 7 inches in diameter and height, lying closely and evenly. The filling apparatus is then removed and replaced by a perforated lid and an internally fitted cover, so that the wet cotton is firmly enclosed between two perforated discs, with the result that no flocks of fiber can be carried away by the circulation of the preparatory and boiling liquors, thus avoiding loss of material and danger of stoppages in the pipes and valves or clogging in the circulating apparatus. The circulation of the preparing liquor thus produces absolute penetration, causes the material under treatment to give up a good deal of the impurities adhering to it, opens it and softens it and thus prepares it in an economical manner for the subsequent boiling operation.

The kier is hermetically closed and the boiling accomplished under high pressure with fresh compound alkaline lye in connection with a special oil preparation, the air in the cotton having been driven out by an automatic device. Owing to the thorough preparation of the material, the bleaching is accomplished by boiling from 5 to 6 hours and the material is then washed in the same kier. All leaves, straw and other impurities are destroyed by the process.

An electrically driven carrier then conveys the boiled cotton into a second kier, a bleaching and neutralizing apparatus of simple construction, but provided with a circulating arrangement. The bleaching bath acts on the material without pressure for two hours only, the liquor consisting of a perfect solution of chloride of lime, or sodium hypochlorite or electrically produced bleaching liquor, the liquor employed not affecting the process. Owing to the preceding thorough preparation and boiling, it is only necessary to keep the strength of the bleaching liquor at about 1/2° Be.

The bleaching bath is followed by a thorough rinsing, 1/2 an hour's sour and then a final thorough washing out in the same apparatus without removing the material under treatment. One man is sufficient to watch all the operations of preparing, boiling and bleaching. The result is a pure white fiber free from oxycellulose and highly hygroscopic.

From the bleaching apparatus the cotton falls into a receptacle which forms part of the rinsing machine, the matter being provided with an automatic discharge to the hydro extractor which, with the wet opener and the drying machine, forms a well arranged set of finishing operations in which manual labor for the transport of the material is nearly eliminated. All the working parts of these machines are carefully protected against rust or oxidation.

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The finest quality of modern Turkish rugs are made in Caesarea and Panderma, where old prayer and silk rugs are faithfully copied in texture and design if not in color. By chemical washing and other means these rugs are sometimes made to look old and are passed on to credulous buyers as valuable antiques.

LABOR COST OF DYEING YARNS

Editor Textile World Record:

We would appreciate it very much if you would advise us the approximate labor cost in the process of dyeing unbleached cotton yarns in direct aniline colors, these colors not to be fast. We are also interested in the same information as applying to aniline blacks. We would like this data as in connection with the tub system of dyeing, with hydro-extractor and the Textile Finishing Machinery Co.'s dryer, and as applying to yarns in skeins. Mateur (2324).

Due regard must be had to the widely different methods of dyeing that are likely to be adopted by dyers. In the case of dyeing with aniline oil for black, there are as many methods as there are dyers. In making the costs, a well known recipe has been used that has given excellent results for skein dyeing, and which was worked out by one of the best known aniline black authorities in England. The components are as follows:

16 lbs. Bichrome, at 8c.	$1.28
11 lbs. Copperas, at 8/10c.	.09
16 lbs. Oil of Vitriol, at 1 1/4c.	.20
8 lbs. Aniline Oil, at 9 1/2c.	.76
12 lbs. Muriatic Acid, at 1 6/10c.	.19¼
Per 100 lbs. of cotton	$2.52¼
Cost of labor during dyeing	1.00
	$3.52¼

Dyeing with the direct colors is a simple operation, and where there is little or no shading to be done by the dyer, it is quite possible to get out of each kettle several lots per day. For simple shades, such as straight blacks, when starting promptly in the morning, with the yarn at hand, four batches per kettle is not unusual. Of course, in dyehouses where the whizzers are deficient in capacity, or are not in sufficient number to take all the cotton yarn brought to them, then the output is less, and the kettles cannot go on as fast as they should.

The average black dyeing recipe for direct blacks is as follows:

For 100 pounds of cotton yarn.

1st kettle

6 lbs. Dyestuff, at 35c.	$2.10
30 lbs. Glauber's Salt, at 3/4c.	.22½
	$2.32½

2nd kettle

4 lbs. Dyestuff, at 35c.	$1.40
10 lbs. Glauber's Salt, at 3/4c.	.07½
Per 100 lbs. of cotton	$1.47½
Cost of labor during dyeing	1.00
Total cost	$2.47½

The so-called "3-bath black," the diazotized and developed blacks that have been brought to the very front of fast black dyeing, and are the closest competitors of aniline black, work out somewhat slightly higher in cost than most blacks, but this must be considered in making comparisons with the finished dyeings. These blacks are generally dyed with quantities very close to those given in the following recipe, which is for 100 pounds of cotton yarn:

Dye-bath

6 lbs. Diazotizable Dyestuff, at 45c.	$2.70
30 lbs. Glauber's Salt, at 3/4c.	.22½
	$2.92½

Diazo-bath

3 lbs. Nitrite of Soda, at 8c.	$ .24
8 lbs. Muriatic Acid, at 1 6/10c.	.12¾
	$ .36¾

Developing-bath

1 lb. Developer (usually phenylaminediamine), at 50c.	$ .50
1 lb. Soda Ash, at 2c.	.02
	$ .52

Or a grand total of $3.81 1/4 per 100 pounds of cotton yarn. To which can be added a labor cost of not less than 1 1/8 cent per pound.

It is extremely difficult to give an exact labor cost per unit of cotton yarn as there are so many conditions that exist in one dyehouse that do not exist in another.

With the diazotizing process, it is found in practice that two dye kettles can keep one nitrite kettle, and one developing kettle going nicely, and consequently such an arrangement materially reduces the labor cost for that kind of black.

In dyeing the aniline black with either oil or salt, as a rule, the dyer does not attempt to get out more than two lots of yarn per day, but here the kettle hands do other work around the dyehouse, as their attention is

not required constantly at their kettle. Sometimes they help in loading the whizzers, or in getting yarn ready for dyeing.

The costs indicated are for the general dyehouse purchases; those given for the dyestuffs are average, mills buying in large quantity, are able to purchase at somewhat lower prices than mills that buy only in small quantities. L. J. Matos.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 170

LIGHT TAN ON WORSTED DRESS GOODS

Light tan on 100 lbs. worsted dress goods. Prepare dye bath containing

420 grs. Amazo Fast Yellow L R.
210 grs. Amazo Fast Pink Y.
(American Dyewood Company, 80 Maiden Lane, N. Y. City, N. Y.)
15 lbs. Glauber's Salt.
1½ lbs. Oil of Vitriol.

Enter goods at 120° F. Bring to boil in 20 minutes. Boil 3/4 to 1 hour and rinse.

The above colors are good level dyeing colors and of satisfactory fastness to light.

Recipe No. 171

GREEN ON WORSTED DRESS GOODS

Green on 100 lbs. worsted dress goods. Prepare dye bath containing:

3 ozs., 158 grs. Amazo Blue.
420 grs. Amazo Brill. Red 2 B.
10⅔ ozs. Amazo Fast Yellow L R.
(American Dyewood Company, 80 Maiden Lane, New York City, N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Oil of Vitriol.

Enter goods at 120° F. Bring to boil in 20 minutes. Boil 1 hour. Rinse.

The colors used to produce the above shade are especially recommended for their leveling properties and good fastness to light.

Recipe No. 172

PINK ON COTTON YARN

Oxamine Fast Pink B X on 100 lbs. cotton yarn. Prepare the dye bath with

¾ lb. Oxamine Fast Pink B X.
(Badische Co., 86 Federal St., Boston.)
20 lbs. Glauber's Salt (Crystals).

Enter at 180° F. and dye at a boil for one hour.

Oxamine Fast Pink B X possesses good fastness to light and will be found of interest in union dyeing.

Recipe No. 173

YELLOW ON COTTON YARN

Triazol Fast Yellow 2GOOO on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Triazol Yellow 2GOOO.
(Geisenheimer Co., 189 Front St., New York, N. Y.)
3 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Triazol Fast Yellow 2GOOO possesses very good fastness to light and washing.

Recipe No. 174

BROWN ON COTTON YARN

Triazol Brown SOOO on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Triazol Brown SOOO.
(Geisenheimer & Co., 189 Front St., New York, N. Y.)
3 lbs. Soda Ash.
20 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Triazol Brown SOOO possesses good fastness to washing in moderately cold water and its fastness in other respects is about the same as the average direct cotton colors.

Recipe No. 175

BLACK ON COTTON YARN

Oxadiamine Black G B Extra Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

5 lbs. Oxydiamine Black G B Extra Conc.
(Cassella Color Co., 182 Front St., New York.)
2 lbs. Soda Ash.
20 lbs. Common Salt.

Enter at 180° F., dye at a boil for one hour and then after treat in a bath made up with

3 lbs. Formaldehyde,
1½ lbs. Potassium Bichromate,

at a temperature of 160° F. to 175° F., after which the goods are rinsed again.

Oxadiamine Black G B Extra Conc. possesses good fastness to light and washing and will be found of value in union dyeing.

Recipe No. 176

BROWN ON COTTON YARN

Kryogen Brown R B N on 100 lbs. cotton yarn. Prepare the dye bath with

12 lbs. Kryogen Brown R B N.
(Badische Co., 86 Federal St., Boston.)
12 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
60 lbs. Glauber's Salt, Crystals.

Dissolve the color with the sodium sulphide and add to the bath containing the other ingredients, and dye at a temperature just below the boil for about one hour.

Kryogen Brown R B N possesses very good fastness to washing and good fastness to light.

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Recipe No. 177

WOOD DYE ON WORSTED YARN

Lemon Flavine on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

8 lbs. Tin Crystals.
4 lbs. Cream of Tartar.
(A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)

Enter at 120° F., bring to a boil and boil for one and one-fourth hours.

Then dye in a bath made up with

8 lbs. Lemon Flavine,

entering at 120° F. and dyeing at a boil for not less than one hour and a quarter.

Lemon Flavine is a wood color of good fastness and will be found of particular interest at the present time.

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Recipe No. 178

RED ON WORSTED YARN

Guinea Rubine 4 R on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Guinea Rubine 4 R.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
20 lbs. Glauber's Salt, Crystals.
4 lbs. Sulphuric Acid.

Enter at 160° F. and dye at a boil for one hour.

Guinea Rubine 4 R possesses the property of resisting chrome salt and will be found an excellent color for shading meta chrome dyes and chrome mordant dyes.

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Recipe No. 179

YELLOW ON WORSTED YARN

Milling Yellow B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Milling Yellow B.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
10 lbs. Glauber's Salt, Crystal.
3 lbs. Acetic Acid.

Enter at 120° F., raise to a boil during 1/2 to 3/4 of an hour then boil during 1/2 hour and add

2 lbs. Acetic Acid

and boil 1/2 hour longer.

Milling Yellow B possesses good fastness to washing, milling and light cotton ramie and artificial silk threads are not stained.

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Recipe No. 180

RED ON WORSTED YARN

Acid Anthracene Red 5 B D on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Acid Anthracene Red 5 B D.
(The Bayer Co., 117 Hudson St., New York, N. Y.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter at 130° F. and dye at a boil for one hour.

Acid Anthracene Red 5 B D is especially recommended for printing on wool. Its fastness to steaming is good, and it may be easily discharged with Rongalite C and zinc oxide.

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Recipe No. 181

YELLOW ON COTTON YARN

Erweco-Vat Yellow G Paste on 100 lbs. cotton yarn. Prepare the dye bath with

12 lbs. Erweco-Vat Yellow G Paste.
(C. Bischoff & Co., 451 Washington St., New York, N. Y.)
6 lbs. Caustic Soda, 76° Be.
3 lbs. Hydrosulphite.

The dyestuff is stirred with hot water, the caustic soda then added and the hydrosulphite finally sprinkled in slowly.

To the main bath which has been prepared with caustic soda and a small amount of hydrosulphite add

60 lbs. Common Salt

and the dye liquor prepared as above. Enter the material and dye at a temperature of from 86° to 104° F. for three-quarters of an hour, keeping the material below the surface of the liquor as much as possible.

Upon removal from the dye liquor squeeze well, expose to the air for a few minutes and finally rinse in water acidulated with sulphuric acid, then soap at the boil.

Erweco-Vat Yellow G Paste possesses very good fastness to light and washing, and excellent fastness to chlorine.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Finishing Compound for Artificial Silk. The Pohl Mfg. Co., 230 E. 79th St., New York City, through its chemical department, is putting on the market a new chemical compound to be used on artificial silk. It is applicable either for warps, tram or skein. It is used in cold liquid form and does not require drying or processing on any other machine. Through the application of this compound to the yarn the artificial silk appears waterproof and runs through looms or shuttles as well as in ideal dry weather, therefore increasing the production of the looms. Various mills using it for tram and other silk yarns for weaving and hosiery report it to be satisfactory.

Peroxide Bleaching. Dr. Lazar Golodetz, Hamburg, Germany. A process for increasing the bleaching power of peroxide of hydrogen.

Fancy Effects on Cotton Cloth. Heberlein & Co., St. Gall, Switzerland. A chemical process for producing fancy effects on cotton goods.

Weighting Silk. Dr. Ernst Stern, Hannover, Germany. A process for weighting silk with compounds of zircon.

Three-Speed Loom. Taylor, Lang & Co., Stalybridge, England. An improved loom which is run at three different speeds during the process of spinning. The slowest and medium speeds are applied during the drawing of the yarn and the high speed is used for putting in the twist.

New Stock Dyeing Machine. E. Fitton, Horburg, near Wakefield, England. A machine for dyeing raw stock. The liquor is forced through the material by a centrifugal pump.

Narrow Fabric Loom. Franz Zimmermann, Barmen, Germany. An attachment for narrow fabric looms, the object being to produce fancy patterns by interlacing extra threads across the warp by means of needles.

Jacquard Card Punching Machine. W. Martin & Son, Nottingham, Eng. An improved piano card punching machine for jacquard looms.

Warp Moistener. T. Holmes, Chorley, Eng. A loom attachment for moistening the warp during the process of weaving.

Self Feed For Cards. Saechsischen Maschinenfabrik vorm. Rich. Hartmann, Chemnitz, Germany. An improved self feed for first-breaker cards which is claimed offers a number of advantages over former models.

Shuttle Changing Motion. Prof. E. Graebner, Chemnitz, Germany. An improved automatic device for changing shuttles. It has been operated successfully in a German mill at 170 picks per minute.

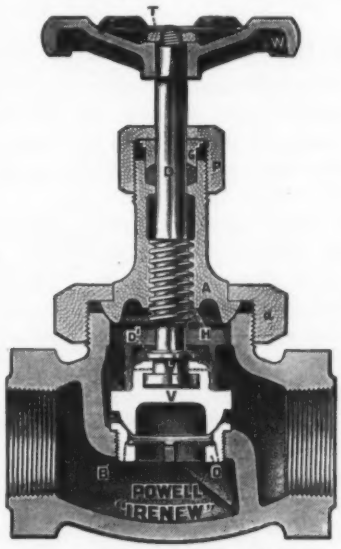
Warp Tension Device. Jacob Pontzer, M.—Gladbach, Germany. A device for regulating automatically the tention in the warp during the process of weaving.

Dyeing Machine. Joseph F. Posselt, Nettau, Bohemia. A circulating machine for dyeing textile materials. It is provided with an automatic device for reversing the direction of the liquor.

Aniline Black on Cotton. Kurt Biltz, Neukirchen, near Crimmitschau, Germany. An improved process for the rapid development of aniline black by a cold process on cotton.

THE POWELL "IRENEW" VALVE

An improved valve called the "Irenew" has been reecntly manufactured by the William Powell Co., Cincinnati, O. A sectional view is shown in the accompanying illustration. This valve, which has been tested under very severe conditions, offers a number of advantages. The stem machined Acme thread is especially adapted for severe use.



SECTIONAL VIEW OF THE POWELL "IRENEW" VALVE

The valve is provided with a large packing nut to prevent leaking around the stem. There is a bonnet with cone of bevelled face connection similar to a ground joint union. This is an important improvement over the old style inside thread red leaded or cemented bonnet, especially on this type of valve. A hexagonal union swivel nut with large flat sides tightens the trimmings to the iron body, and can be unscrewed hundreds of times without rounding the corners caused by wrench slipping. The body shell is of selected close grained iron of high tensile strength and cast so as to give a uniform distribution of metal. Four guide ribs are cast in the neck extending down close to the seat for a true axial guide to the disc while opening or closing the valve.

The renewable horse-shoe disc eliminates a lock nut and is a great improvement over the ordinary method. It is arranged to slide over the head of the stem into a socket permitting it to swivel freely. When removing the disc from the stem for regrinding or renewing it is necessary merely to slide the disc from socket. The disc is cast of white "Powellium" bronze and is practically indestructable.

When regrinding it is not necessary to disconnect the valve from the pipe. The bonnet, A, is released by unscrewing the hexagonal nut, a, withdrawing the valve trimming and inserting a pin or small nail of suitable size through the drill hole, L, to lock the disc. Fine sand or brick dust ground glass and soap water are then applied to the disc which is rotated back and forth on the seat ring until a good bearing is obtained. The pin is then carefully removed, the disc and seat ring wiped clean, the trimming restored to its place and the hexagonal nut tightened, when the valve is ready for service again. The "Irenew" valves are tested to double their working pressure and are guaranteed by the manufacturers. They are made in globe, angle, cross and check valve patterns and screwed ends, suitable for 150 pounds steam working pressure, and can be used where a bronze valve won't stand up, especially on chemical lines where acids attack brass. This is good valve for textile mills and power plants.

THE PERKINS DIRECT CONNECTED ELECIRIC FANS

The illustrations show two new styles of the Perkins direct connected electric fan built by B. F. Perkins & Son, Inc., Holyoke, Mass. These fans have the great advantage that they can easily be placed where they will do the best work without regard to the location of line shafting or other driving arrangement. They can be controlled from a switch placed at any distance from the fan, wherever it is most convenient to operate.

The Perkins fans are built to suit varying conditions of installation. One style is bolted to the floor or to a stout shelf or bracket. It can also be inverted and bolted up against the ceiling. This fan is frequently used in factories for exhausting

directly out of a window. The window can be left in place and the fan installed without any connection to the window. When the fan is to be run the window can be opened. In cold or stormy weather, or when the fan is not needed, the window can be closed just as if the fan were not there.

Another style of the Perkins fan is intended for use in light partitions as for example, where a window has been boarded up. The flanges on the fan casing are bolted onto the light partition and additional support is gained by bolting the feet down onto a light shelf, or bracket, or inverting and bolting up to the ceiling.

FIG. 1. PERKINS FAN BUILT INTO A BRICK WALL

The fan shown at Fig. 1 is intended for use where it is desired to set the fan in a brick or cement wall. Fig. 2 shows a vertical shaft outfit to be used where a vertical movement of air is required. Heated air naturally rises, and a vertical shaft fan in the ceiling will remove excess heat from a room with greater efficiency than can be accomplished with any fan in the side wall.

FIG. 2. A PERKINS VERTICAL SHAFT OUTFIT

The Perkins fans are of the disc or propeller type and are adapted for removing large quantities of air under light pressure. They are generally installed in an outside wall or ceiling, exhausting the air from the room and discharging into the open air. The builders will be pleased to supply any further information desired and to consult prospective buyers regarding the type of fan best suited for the special conditions.

PUTTING UP GOODS TO SUIT BUYERS

Cotton mills and the converters very seldom bother with looking into the possibilities of new business out of the beaten track, and the average state of mind is to take what business comes along in the regular way and not go into side lines looking for new outlets for goods. Those, however, who inquire into these possibilities frequently find new and profitable markets. In the paper industries the mills and wholesalers have been quick to see the advantage in delivering goods to the customer put up in precisely the form which the customer can best handle them where this could be done conveniently and practically. The result has been that those who appreciated the advantage of adopting this policy have rapidly developed trade which for volume and profit soon become a large factor in the mills' output.

In many cases the purchaser and consumer of cotton cloth, for example, would find it more convenient to receive this cloth from the producer, put up in the form of rolls, rather than in the fold or piece. The bulk of the goods sold to be converted are cut up by laying them out on long tables anywhere from fifty to one hundred plies of cloth at a time, and if the goods were obtainable in roll form it would be a simpler matter to lay them out. As it is now, the folded goods leave a crease every thirty-six inches, and this must be smoothed out by hand as the goods are being laid down.

There is already considerable demand for goods to be furnished in roll form rather than in piece form, and yet it seems to be the policy of the average selling agent to discourage this demand rather than to meet a customer half way, or more than half way, and furnish the goods in the form most con-

venient for him to handle them. The machines for doing the work satisfactorily have been developed by machinery builders and are available.

Average wholesaler competes for an order by offering inducements as to price, quality, quick delivery and long terms. It is possible to offer an equally or even more attractive inducement than any one of the three mentioned by offering to deliver to certain customer goods in the form of rolls in cases where this factor is known to be an advantage, and this service can be rendered at a much less expense than either price cutting or extending terms of payment, and is actually worth as much or more to the customer.

In the average case where goods are called for in the form of rolls, the mill is either not equipped to deliver in that form, or the goods s delivered are pretty apt to be put up in a slipshod and unsatisfactory way.

An enormous yardage of textile goods of all kinds is also consumed in the form of comparatively narrow strips. In the clothing trades, in the electrical lines where enormous quantities of cloth is used for insulation purposes, also such lines as automobile tires, surgeons' bandages, typewriter ribbon, flags, tents, awnings, bags, etc., a vast yardage is worked up in the form of strip of less width than the original piece of cloth.

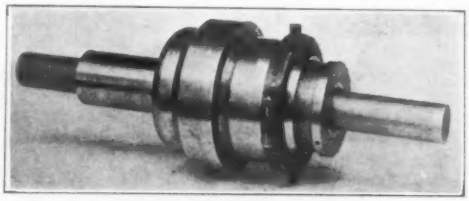
The Cameron Machine Co. builds a machine which, with one tender, will convert upwards of 10,000 yards of cloth per day into any width of strip required, and at the same operation coil this strip into firmly wound rolls.

Only the larger individual users of cloth in strip form install an outfit of this kind for their comparatively limited needs, but they are willing to pay for the goods, the wholesalers for the service, and the cost of delivering goods in this form rather than in the piece form is small.

A number of manufacturers, converters and other wholesalers in the cotton goods line who have looked into this matter since it was first called to their attention in these columns several months ago have found it worth while.

DODGE SAFETY SELF-OILING CLUTCH

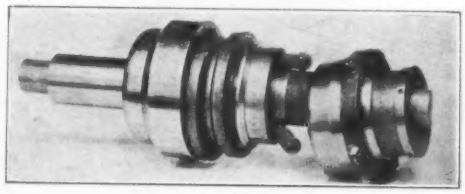
After careful and exhaustive experimental work, the Dodge Mfg. Co., Mishawaka, Ind., has originated and developed an improved solid multiple disc friction clutch, which retains all the good points of the present Dodge clutch with the addition of the important features of safety, efficiency and durability. All moving parts of the mechanism of this new clutch are concealed, making a perfectly smooth contour. There are



THE DODGE SELF-OILING CLUTCH

no projecting moving parts to catch clothing or injure workmen, and no cumbersome or unsightly guards or screens are necessary.

The design and materials of the multiple friction discs, combined with the new roller toggle operating mechanism, lead the Dodge Mfg. Co. to believe that this is the most



THE DODGE SELF-OILING CLUTCH

powerful clutch of its size that has yet been designed.

The rolls on the toggle levers travel on conical surfaces arranged to give high pressure on the friction discs with a minimum amount of mechanism friction. The use of rollers in place of sliding parts makes the clutch easily operated. The action of centrifugal force tends to keep the clutch disengaged when thrown out.

The clutch is self-lubricating. An oil ring revolving in a large chamber or oil reservoir, carries a continuous supply of oil which is circulated through suitable grooves to all

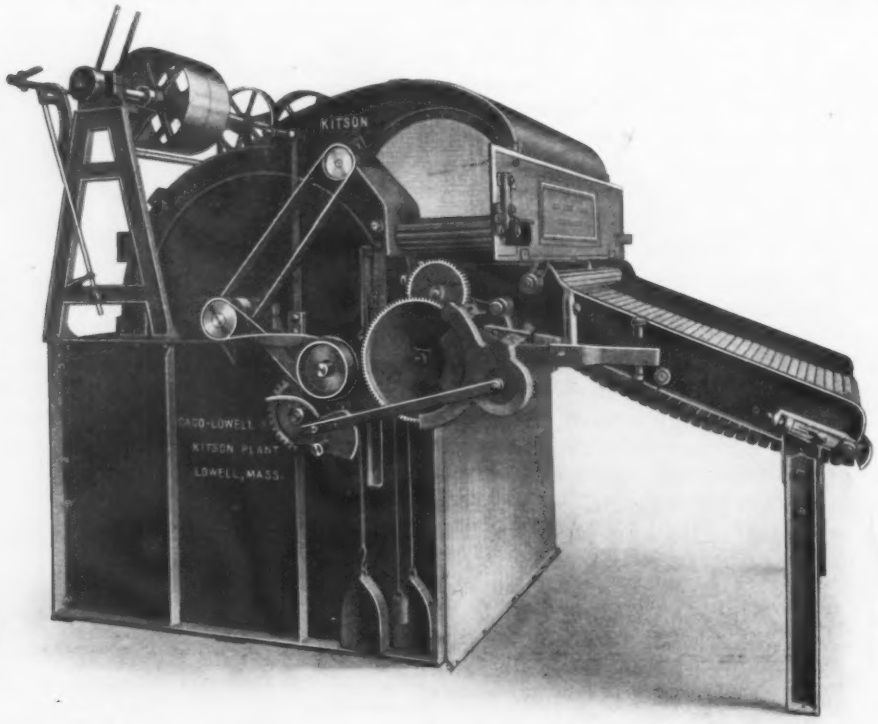
parts of the sleeve carrying the pulley. This chamber is sealed to prevent oil working out into the mechanism. The shifter ring for engaging the clutch is made with a channel section, which retains oil and assures positive lubrication at this point at all times.

The clutch is easily adjusted with a single nut adjustment which is simple and positive. Backing off this nut permits removal of the operating cone which exposes the toggle mechanism and also permits the removal of the entire inside mechanism for repairs. The best materials are used throughout. It takes little space on the shaft, less attention in operation, has a good appearance and is considered a worthy addition to the Dodge line of power transmission machinery.

The clutch may be easily applied to stationary or portable tools or countershafts, as well as pulleys, gears, sprockets, etc., and is especially suited to high speeds. It is not only safe in its design and construction, but presents a most effective means for the prevention of accidents and injuries to workmen by giving absolute control of the power between the shafting and the machines.

WILLOW FOR WASTE CLEANING

The illustration shows an improved willow or duster for cleaning soft cotton waste, such as card strips, picker motes, etc. It is built by the Saco-Lowell Shops, Lowell, Mass., and is of very solid and rigid construction to withstand the shocks of heavy, intermittent feed and discharge of large masses of material. The feed apron is of the regular lattice type and the percentage of waste rejected can be controlled within wide limits. This is done by an adjustable mechanism connected with the feed rolls and discharge, which, being intermittent in their action, can be varied so as to regulate the length of time that the stock is subjected to the cleaning action of the large cylinder.



AN IMPROVED WILLOW FOR CLEANING SOFT COTTON WASTE

The main cylinder is of the "Porcupine" type, 49 inches in diameter, with extra heavy

blunt pins. The capacity of the machine is from 4,000 to 10,000 pounds of stock per day, varying with the character of the material. Further information can be obtained from the builders.

AN IMPROVED LOOM

The illustrations show an improved loom recently patented in this country and which is designed so that a large bobbin of filling yarn can be driven positively and at a suitable speed across a shed of any desired

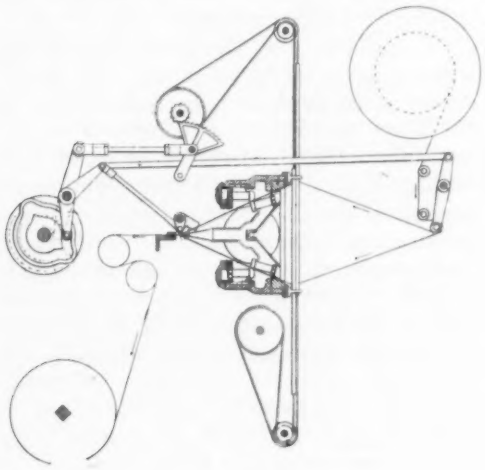


FIG. 1

width. Fig. 1 is a sectional elevation showing the principal parts of a loom.

Although the improvement may be applied to a loom with vertical heddles and horizontally arranged warps, a loom in which the heddles are horizontal and the warps travel vertically is preferred.

The frame of the machine supports at its upper part a warp beam, from which the warp threads pass under two rollers and over another roller and are then led through the eyes of the heddles. These heddles lie in horizontal planes and are reciprocated horizontally from right to left. The third roller is raised and lowered to keep the warp threads under uniform tension during the closing and opening of the shed. From the heddles the warp threads pass through a set of horizontal reed bars, the ends of which are secured in bars extending across the loom, separated by spacing blocks. The undersides of the reed bars are cut out to provide dovetailed or undercut grooves, constituting a raceway in a horizontal plane for the shuttle.

This shuttle is pendent from the raceway and comprises an open frame with dovetailed or undercut edges to run in the reed raceway, end frames and bottom cross bar. The end frames are provided with suitable bearings for the journals of the bobbin, which can be of large size to carry a large quantity of yarn. The shuttle frame is provided with an extension piece with a guide for the thread to be laid in the shed of the warps.

The shuttle frame has bearings for rollers. The pinions at the upper ends are adapted to mesh with fixed racks on the frame. For convenience the reed bars may be used to provide the racks. As the shuttle is carried backward and forward through the raceway, the rollers are positively and correspondingly rotated, and the sizes of the pinions and rollers are such that the rollers have a surface speed equal to the lineal speed of the shuttle. Four of these rollers are used, two on each side of the shuttle frame. Shuttle drivers are arranged outside the warps, one on each side of the shuttle. Each driver comprises an upright frame with a slide mounted to travel back and forth in a guideway in the cross bar.

At each end of the frame is a vertical bearing for a spindle, carrying at its lower end a pinion to gear into a rack formed on the inner face of the fixed plate. On the upper end of each spindle is a roller, lying in the same horizontal plane with the closely adjacent roller on the shuttle frame. Thus as each driver is traversed back and forth in its guideway the rollers are positively rotated.

The rollers on the drivers stand outside of, but overlap the adjacent rollers on the shuttle, so that when the drivers are traversed in either direction in their guideways, the rollers will carry the shuttle along. The warp passes between the rollers, but since both these rollers are positively rotated and with an equal shuttle speed, there will be no

rubbing action upon the yarn. It is preferable to make these rollers or their surfaces of semi-hard material such as rawhide or rubber. In some cases, one shuttle driver on one side of the shuttle will be sufficient.

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A PROCESS FOR SCOURING WOOL

A German process for scouring wool without the use of water has recently been patented in this country and is described by the inventor as follows: No method has hitherto been known for cleansing wool without the employment of water. The foreign substances which are soluble in water and consist chiefly of soap and salts, adhere in the form of small protuberances to the wool fibers. The protuberances are microscopic in size and of irregular outline; are jagged and adhere to the fiber at one point only, that is to say, they do not encircle the fiber. To the raw wool the protuberances referred to are held and protected by a layer of wool fat covering the fiber as well as the little sweat bulbs; this layer of fat serves to load the fiber also with other impurities, such as thrust-off scales and other particles of foreign matter, whereas particles of excrement and dirt adhere to and around the fiber tufts.

By the improved process the layer of fat is first removed by a dissolvent having little or no tendency to dissolve salts and soaps; a suitable substance is ethylene trichlorid or dichlorid. If the removal of the fat is properly performed, the little sweat bulbs will be found to adhere directly to the fibers after the fat has disappeared, and may be easily separated with or without a current of air by rubbing, combing, heating or drawing the tufts apart, that is by any process of dry washing, including the use of kieselguhr, the impurities being removed together with the kieselguhr or other similar substance. This employment of powdered material should not be confused with processes wherein a complete cleansing of the wool, with or without the use of a current of air, is effected by treating the raw, fat-containing wool with dry, fat absorbing materials of which kieselguhr is one. The capacity of the dry substance to dissolve or absorb the fat is immaterial because the fat has been removed previously and prior to the application of the material in question. This latter is used chiefly in connection with an air current in order to expedite the process.

The new process removes other insoluble impurities which adhere to the fibers, partly by the wool fat and partly as excrement and dirt. These impurities may be almost completely removed from the fibers by a dry process, by the mechanical treatment of the fat-freed wool as described.

To facilitate the cleansing process, the layer of fat covering the fibers, and the dissolvent must be thoroughly removed so that the fibers are entirely free from their original adhesiveness. Care should be taken to avoid softening the little bulbs during the moving of the fat, either by superheating or moistening, because such softening of the bulbs might cause them to adhere more tenaciously to the fibers and thus render more difficult their separation from the fibers by mechanical treatment. It is essential that, while the wool fat and sweat substances must be well separated from the fibers, the bulbs are not crumbled or otherwise separated from the wool. The dust arising during the dry washing in question contains a large proportion of the wool sweat in a solid form that is particularly well suited for their utilization.

A quantity of wool is lixiviated with ethylene trichlorid or dichlorid, care being taken to avoid the objectionable steps already mentioned, and the wool fat will be dissolved without diffiuclty. The quantity and temperature of the dissolvent, as well as the length of time of use of the same, is unimportant. The dissolved fat still adhering to the wool fibers is removed by rinsing in a second quantity of the dissolvent after which the wool is dried in a current of gas, air or carbonic acid. The fibers may then be freed of the remaining impurities by means of a willower. The dust is carried away by a current of air. Finally the remaining impurities are removed by rinsing with water.

Personals

Corley Strickland has been elected president of the Strickland Cotton Mills, Valdosta, Ga., to succeed the late B. F. Strickland.

George J. Crosier, superintendent of the Greylock Mill, North Adams, Mass., has resigned his position with that company. He is succeeded by Joseph Brierly, who has been assistant superintendent of the Berkshire Mill at Adams, Mass. Mr. Brierly's place will be taken by T. R. Plunkett, who has been manager of their mill at North Pownal, Vt. Mr. Plunkett's place at North Pownal will be filled by James Fitzsimmons, overseer of the carding department at the No. 3 Berkshire Mill, Adams, Mass. Arthur Jacobs, of North Pownal, will succeed Mr. Fitzsimmons at Adams.

E. A. Evans has been appointed superintendent of the C. A. Caswell Mill, Bloomsburg, Pa. He was formerly employed in a similar position at Stroudsburg, Pa., and succeeds William Sykes.

C. B. Maxfield has been appointed superintendent of the Littleton Hosiery Mill, Littleton, N. C. He was formerly employed at the Fay Stocking Co., Elyria, Ohio.

Alexander R. Stevenson, overseer of dyeing at the Bigelow Hartford Carpet Co., Clinton, Mass., has resigned his position with that company. He has been in the employ of this company for forty-seven years and succeeded his father, who was boss dyer there several years ago.

George W. Meldrum has been appointed overseer of dyeing at the Bigelow Hartford Carpet Co., Clinton, Mass. He has been assistant overseer of dyeing at the mill for a number of years.

John Bouchard, for the past ten years overseer of the frame spinning department at the Slater Manufacturing Co., Pawtucket, R. I., has resigned his position with that company. He is to accept a similar position in New Bedford, Mass.

Harry Hargraves, of Maynard, Mass., has accepted the position of overseer of weaving at the Ottaquechee Woolen Co., Evarts, Vt.

Arthur Torrey, overseer of finishing at the Merrimack Woolen Co., Dracut, Mass., and George J. Burke, second hand in the finishing department at this mill, have resigned their positions.

J. E. Quinn, superintendent of the Smithfield Worsted Mills, Greenville, R. I., has returned to the Continental Worsted Co., Providence, R. I., as superintendent of finishing. He formerly held this position.

James E. Donahue has accepted the position of overseer of carding at the Trent Valley Woolen Manufacturing Co., Campbellford, Ont., Canada. He was formerly employed at the Felters Co., Millbury, Mass.

James H. Hendry, designer at the Arms Mill, American Wolen Co., Skowhegan, Me., has resigned his position with that company.

George C. Hinckley has been engaged by the American Silk Spinning Co. of Pawtucket, R. I. He will devote the greater part of his time to the selling end. He was formerly employed at the Champlain Silk Mills, Brooklyn and Whitehall, N. Y.

Sidney H. Little has accepted the position of designer and overseer of weaving at the Tuxedo Worsted Co., Passaic, N. J. He was formerly employed as superintendent of the Waucantuck Mill, Uxbridge, Mass.

Robert Fazackerley has accepted the position of overseer of weaving at the Stark Mill, Manchester, N. H. Mr. Fazackerley was employed in Canada for a number of years.

James Watters has accepted a position as overseer of weaving, spooling and twisting at the Sonnhill Worsted Co., Danielson, Conn. He was formerly employed in a similar position with the Cleveland Worsted Co., Cleveland, Ohio.

W. R. Bliven, overseer of carding at the Patrick-Duluth Woolen Mill, Duluth, Minn., has resigned his position with that company.

Harvey H. Duhamel has succeeded George McGregor as overseer of spinning at the Grant Mill, B. B. & R. Knight, Providence, R. I. Mr. McGregor goes to the Postex Cotton Mill, Post City, Texas.

Thomas F. Loftus, overseer of weaving and designing at the Tuxedo Mill, Passaic, N. J., has resigned his position with that company.

W. T. Adams has been appointed superintendent of the Westminster Knitting Mill, Westminster, S. C.

P. A. Bolt has occepted the position of overseer of carding at the Victor Mill, Greer, S. C. He was formerly employed at the Monaghan Mills, Greenville, S. C.

John S. Stroud has been appointed superintendent of the Stonewall Cotton Mills, Stonewall, Miss. He was formerly employed in a similar position at the Lauderdale Cotton Mills, Meridian, Miss.

John Tillett has been appointed secretary and treasurer of the Jewel Cotton Mills, Thomasville, N. C. He has recently resigned a position in the office of the Chadwick-Hoskins Mills, Charlotte, N. C.

O. L. Derrick, overseer of carding at the Hamilton Carhartt Mills, Rock Hill, S. C., has resigned to return to his former position as superintendent of the Harriss Mill of the same place.

W. C. Kenyon has been elected secretary, treasurer and general manager of the Union Cotton Mills, Maiden, N. C. He comes from Newton, N. C.

P. C. Costner has been elected president of the Union Cotton Mills, Maiden, N. C. He comes from Lincolnton, N. C.

W. L. Dunn has succeeded J. A. Fowler as overseer of weaving at the Lauerdale Mill, Meridian, Miss. Mr. Dunn was formerly employed at the Victor Mill, Greer, S. C.

N. A. Gregg has succeeded J. E. Wicker as superintendent of the Holt-Morgan Mills, Fayetteville, N. C. He comes from Kannapolis, N. C.

E. L. Nunnery has accepted the position of overseer of weaving at the Postex Cotton Mills, Post City, Texas.

W. F. Kincaid, superintendent of the Armstrong Cotton Mills, Gastonia, N. C., has resigned to accept a similar position with the Clara Manufacturing Co., of the same place.

Thomas Kirkham, overseer of the cloth department at the Dartmouth Mill, New Bedford, Mass., has resigned his position with that company. The employes of the cloth room presented him with a clock and fountain pen, the presentation speech being made by James Haughton.

J. Frank Gardner has been appointed agent of the Quinebaug Co., Danielson, Conn., to succeed the late J. H. Smith.

At the annual meeting of the stockholders of the Arnold Print Works, North Adams, Mass., D. G. French was elected president; Andrew McKean, vice-president; William A. Gallup, treasurer and George B. Flood, assistant treasurer.

Philip Brugg has been appointed superintendent of the Shirreffs Worsted Mill, Fitchburg, Mass., to succeed David Shirreffs, who has accepted a poistion, formerly held by him, with a large clothing house in New York City. Mr. Brugg was formerly designer at this mill.

William T. West, of Roselle, N. J., has been appointed vice-president of the Shetucket Co., Norwich, Conn. Oscar W. Carpenter, of Norwich, has been appointed assistant secretary and assistant treasurer and Robert A. Smith, who has been agent for this company, has been given the title of agent and general manager.

Philip Strong has been appointed superintendent of the American Felt Co., Hyde Park, Mass. He was formerly employed as superintendent of the same company at Franklin, Mass. J. A. Wilson succeeds him at Franklin.

Edward B. Feeney has accepted the position as overseer of twisting, winding and spooling at the Stroudsburg Woolen Mill, Stroudsburg, Pa.

John H. Bence, overseer of dyeing at the Jefferson Manufacturing Co., Jefferson, Mass., has resigned his position with that company. He is succeeded by Victor Johnson, who was formerly employed at the Eagle Lake Mill of the same company.

Thomas E. Ainley has accepted the position as overseer of carding at the Crown Mill, Marcellus, N. Y. He was formerly employed at Almonte, Ont., Canada.

Frederick H. Birkby has accepted the position of overseer of dyeing at the Yorkshire Worsted Mills, Lenni Mills, Pa. He was formerly connected with the Progress Dyeing & Finishing Co. of Philadelphia, Pa.

C. E. Sweet, formerly employed at the Utica Knitting Co., Utica, N. Y., has been appointed overseer of frame spinning for the B. B. & R. Knight Mill, Centreville, R. I., to succeed Joseph Suprenant. Mr. Suprenant assumes charge of the entire spinning for this company to succeed John McCavitt.

Gorham N. Norton, agent of the Sonnhill Worsted Co., Danielson, Conn., has resigned his position with that company. He is succeeded by Howard Wood, formerly designer at the Puritan Mill, Plymouth, Mass.

W. L. Sjostrom has been appointed superintendent of the Cobourg Dyeing Co., Cobourg, Ont., Canada. Mr. Sjostrom went there to take charge of dyeing and finishing but was promoted to the position of superintendent in a short time.

John F. Cullen has been appointed overseer of weaving at the Cleveland Worsted Co., Cleveland, Ohio. He comes from Lawrence, Mass.

Howard Baetjer has accepted a position with the Mt. Vernon Woodberry Cotton Duck Co., Baltimore, Md. It is reported he will be made general manager as soon as the mills are turned over to the new corporation which was recently proposed by the bond holders.

Peter J. Hinds, overseer of the spinning department in the No. 3 Mill of the American Thread Co.'s plant at Holyoke, Mass., has been appointed assistant superintendent of the Kerr Mill, Fall River, Mass. Mr. Hinds was formerly employed at Newark, N. J., before going to Holyoke and his promotion to the position of assistant superintendent has been due to his efforts to get a higher position. He has secured patents on different improvements that he has made to benefit the work in the spinning department.

Frank Garrity, employed at the Crystal Spring Bleachery, Assonet, Mass., met with an accident at the bleachery and is now at the Union Hospital with a broken back, he having been whirled around the shafting a number of times before the machinery could be stopped. He is 24 years of age and has the sympathy of his many friends. His father, John Garrity, was killed at the Somerset Junction Crossing on the New Haven R. R. a few months ago and he and his sister, 16 years of age, were the sole support of his mother and a large family.

Thomas F. Glennon has been elected a director of the Soule Mill, New Bedford, Mass., to succeed the late Arnold Schaer.

Joseph Coldwell has been appointed superintendent of the Bristol Manufacturing Co., New Bedford, Mass., to succeed John A. Fernley. Mr. Coldwell comes from the Booth Manufacturing Co., of the same city.

P. H. Duffy, overseer of carding at the Oak Valley Woolen Mill, Tarkiln, R. I., has resigned his position with that company.

George Fraser has accepted the position of carding at the Saxton Woolen Mill Corporation, Norwich, Conn.

Lucien L. Desaulniers, for sixteen years assistant superintendent and accountant for the Specialty Weaving Co., Shelton, Conn., has accepted the position of accountant for The Emerson Publishing Co., of Ansonia, Conn.

A. T. Proctor has accepted a position as manager of the Monarch Knitting Co., Buffalo, N. Y. He comes from Montreal, Canada.

A. E. Benson has accepted a position as superintendent of the Indiana Woolen Mills Co., Indiana, Pa. He formerly held a similar position with the Hewson Pure Wool Textile, Ltd., Amherst, N. S., Canada.

James P. Southern has accepted the position as office manager at the Mayo Woolen Co., Millbury, Mass.

William Jowett has been appointed superintendent of the Golden State Woolen Mill, Long Beach, Cal. He was formerly employed at the Salt's Textile Manufacturing Co., Norwalk, Conn.

James Entwistle has taken charge of the bleachery at the Niagara Textile Co., Lockport, N. Y. He comes from Lowell, Mass.

Paul Schwartz, designer for the Granite Mill, A. L. Sayles & Sons, Pascoag, R. I., has resigned to accept a position as superintendent of the Akela Mill, same company, Pascoag.

Charles Taite, designer at the Holden, Leonard Co., Bennington, Vt., has resigned to accept a similar position with the Granite Mill, A. L. Sayles & Sons, Pascoag, R. I.

John Wheeler has accepted a position as superintendent of the Grant Yarn Co., Fitchburg, Mass. He was formerly assistant superintendent of the Kerr Mill, American Thread Co., Fall River, Mass.

Robert Hancock, overseer of the combing department at the Arlington Mill, Lawrence, Mass., has resigned his position with that company, he having been employed there for over thirty years.

James Rennie, who has been second hand in the dressing department at the Ardmore Mill, Yantic, Conn., has resigned his position with that company.

J. W. Bingham has been appointed superintendent of the Marlboro Mill No. 4, McColl, S. C.

B. F. O'Neal has accepted the position of overseer of spinning at the Cleghorn Mills, Rutherfordton, N. C.

J. D. Harrison has been promoted to overseer of carding and spinning at the Fort Valley Mills, Fort Valley, Ga.

W. D. Tidwell has accepted the position of overseer of spinning at the Harborough Mill, Bessemer City, N. C. He was formerly employed at the Clara Mill, Gastonia, N. C.

W. L. Bray has accepted the position of overseer of winding at the Fort Valley Cotton Mills, Fort Valley, Ga. He was formerly employed at the Bibb Manufacturing Co., Macon, Ga.

C. K. Quick has been transferred from assistant superintendent of the Maple Mills, Dillon, S. C., to a similar position at the Hamer Mill, Hamer, S. C.

J. S. Peeler has accepted the position of assistant superintendent of the Maple Mills, Dillon, S. C.

F. L. Drake has accepted the position of overseer of carding at the Hartsville Cotton Mills, Hartsville, S. C. He was formerly employed at the Wylie Mills, Chester, S. C.

Lee Smith has accepted the position as overseer of spinning at the Clara Mill, Gastonia, N. C.

D. J. Thomas has been appointed superintendent of the Armstrong Mill, Gastonia, N. C. He was formerly overseer of spinning at the Edna Mill, Reidsville, N. C.

S. C. Howell has accepted the position of overseer of carding at the Capelsie Mill, Troy, N. C.

George C. Buscher has been promoted from overseer of spinning at the Marlboro Cotton Mill at Bennettsville, S. C., to superintendent of the same company's No. 3 mill at McColl, S. C.

F. M. Langston has accepted the position of overseer of the cloth room at the Fairmont Manufacturing Co., Fairmont, S. C.

C. I. Wilson, formerly purchasing agent for the Boston Woven Hose & Rubber Co., Cambridge, Mass., has resigned his position to accept a similar one with The Northwestern Knitting Co., Minneapolis, Minn.

C. Smith, superintendent of the branch mill of the Brainerd & Armstrong Silk Co., Norwich, Conn., has resigned his position with that company. He is succeeded by J. Martin.

John Gallagher, overseer of dry finishing at the Madison Woolen Co., Madison, Me., has resigned his position with that company.

Arnold L. Garside has been appointed overseer of the cloth room at the Butler Mill, New Bedford, Mass. He was formerly employed at the Lyman Mill, Holyoke, Mass.

Albert E. Riley, overseer of dyeing at the Fred L. Sayles Co., Pascoag, R. I., has resigned his position with that company.

Hugh Cameron has accepted the position of overseer of dyeing at the Fred L. Sayles Co., Pascoag, R. I. He was formerly employed in a similar position at the Niantic Manufacturing Co., East Lyme, Conn.

Joseph M. Doyon has been promoted from second hand of twisting to second hand of spinning at the Crown Manufacturing Co., Pawtucket, R. I.

Thomas F. Reilly, overseer of reeling, spooling and winding at the Fred L. Sayles Co., Pascoag, R. I., has resigned his position with that company. He is succeeded by Eugene F. Mulgrew.

Alexander R. Stevenson, superintendent of the dyeing department at the Bigelow-Hartford Carpet Co., Clinton, Mass., was presented with a diamond stick pin by the employes of that department. Mr. Stevenson has been in the employ of this company for forty-seven years. George W. Meldrum, who succeeds Mr. Stevenson, presented the pin to Mr. Stevenson in behalf of the employes in the dyeing department.

R. M. Miller, Jr., president of the Elizabeth Mills, Charlotte, N. C., will retire from active management of the company in favor of Thomas D. Mackay, who has been appointed secretary and treasurer. Mr. Miller will retain the presidency. Mr. Mackay was formerly employed at the Highland Park Mills, Charlotte, N. C.

W. E. G. Robinson has been appointed general manager of the Linden Manufacturing Co., Davidson, N. C.

S. J. Webb has been appointed superintendent of the Magnolia Mills, Charlotte, N. C. He was formerly employed at the Lumberton Cotton Mills, Lumberton, N. C.

H. G. Winget, formerly assistant superintendent at the Statesville Cotton Mills, Statesville, N. C., has accepted the position as night superintendent at the Clara Mill, Gastonia, N. C.

A. F. Bruton has been appointed superintendent of the Dacotah Mill, Lexington, N. C.

W. D. Lawson has accepted the position of overseer of carding and combing at the Kinston Mills, Kinston, N. C. He was formerly employed at the Edenton Cotton Mills, Edenton, N. C.

C. S. Pitts has accepted the position of overseer of carding at the Star Thread Mills, Athens, Ga.

B. R. Phillips has accepted the position of overseer of carding and spinning at the Jefferson Cotton Mills, Jefferson, Ga. He was formerly employed at the Star Thread Mills, Athens, Ga.

William J. Rollinson has re-entered the employ of the Waucantuck Mill, Uxbridge, Mass., as overseer of finishing. He has recently been employed at the Akela Mill, Pascoag, R. I.

Charles Reynolds, of Adams, Mass., has been appointed overseer of carding at the Greylock Mill C, No. Pownal, Vt., to succeed Arthur Jacobs.

DEATHS.

W. P. Wilson, one of the pioneer woolen manufacturers of Tennessee, died at his home in Athens, Tenn., at the age of 70 years. At the time of his death he was president of the Peerless Woolen Mills, Rossville, Ga., stockholder and director of the Park Woolen Mill, Rossville, also stockholder of the American Textile Woolen Co.

Dwight Smith, treasurer and buyer for the Lowell Felt Co., Lowell, Mass., also a member of the firm of Dwight Smith & Son, Boston, Mass., died at his home in Lowell, at the age of 76 years after a short illness. He is survived by two sons.

George W. Payne, president of the George W. Payne Co., builders of textile machinery, Pawtucket, R. I., died at his home in that city at the age of 73 years. Mr. Payne made a specialty of spoolers, winders and quillers for the textile trade. He traveled extensively and was well acquainted among manufacturers throughout the country. He was also treasurer of the Broad St. Power Co. He leaves a wife, three sons and a daughter.

William F. Wait of the Nye & Wait Carpet Co., Auburn, N. Y., died at his home in that city of Bright's disease. He was born in Hagaman Mills, N. Y., in 1847. Mr. Waitt has been associated with the firm which bears his name since 1868. He is survived by his wife, one daughter and a son, William F. Wait, who is vice-president of the company.

Henry Doherty, president of The Henry Doherty Silk Co., Paterson, N. J., with main office at Lakeview, N. J., died at Los Angeles, Cal., where he had gone for his health. He was in his sixty-third year and was a member of the Silk Association of America and the Hamilton Club of Paterson. He is survived by his wife, three sons and a daughter.

John Vedder Morris, one of the oldest knit goods manufacturers of the Mohawk Valley, a member of the firm of A. V. Morris & Sons, Amsterdam, N. Y., also connected with several other mills, died at his home in that city at the age of 65 years. Mr. Morris was a director of the First National Bank and is survived by his wife, two daughters and one son.

Augustus I. Morse, one of the best known cotton manufacturers in New England, died at his home in Putnam, Conn., after a lingering illness. Mr. Morse was born in Putnam on Dec. 8, 1855. He was for over thirty years superintendent of the Morse, Nightingale and Powhatan Mills of Putnam and on the retirement of his father he was made agent of these mills. He resigned his position some time ago on account of failing health. His wife and one child survive him.

Seymour J. Hyde, a millionaire cotton and silk manufacturer, and head of the firm of A. G. Hyde & Sons, Broadway, New York City, died at his home as the result of a fall received from riding a horse recently. Mr. Hyde was a member of the Greenwich Field Club and an enthusiastic horseman. He is survived by his wife and several children.

Charles N. Sterrett, who has been prominent in the silk trade of Paterson, N. J., died at his home in that city. His death was due to heart trouble. He was a member of the firm of Dexter Lambert & Co., and came to Paterson in the sixties. His wife and two children survive him.

David Blackburn, 77 years of age, died at his home in Feeding Mills, Mass., of internal hemorrhages. He was born in Batley Car, Yorkshire, Eng., on July 31, 1838, and followed the occupation of foreman of the wool spinning department in large mills in his home town. He spent ten years in Germany as foreman in large mills. Mr. Blackburn has sons who are overseers of spinning in this country.

George A. Marshall, a well known resident of Clinton, Mass., and for many years employed at the Bigelow Carpet Co., in that city, as foreman and assistant foreman in the machine shop, was found dead in his room at the Dixon House on February 12. He had been in ill health for some time.

George Swift, for a number of years employed in the dressing department in mills in Providence, R. I., died at his home in that city after a lingering illness at the age of 39 years. He was a past president of the Peabody Lodge, Sons of St. George and past secretary of the Dresser Tenders' Beneficial Association. His wife and one daughter survive him.

Abraham Saulnier, fireman at the Renfrew Manufacturing Co., Adams, Mass., met with an accident which caused his death, while shoveling coal at the works. The coal caved in falling on his head which resulted in his death. He is survived by his wife and two children.

Alexander Allen, of the Allen Knitting Mills Co., Philadelphia, Pa., who has been in poor health for some time, died suddenly and peacefully on February 9 in his seventy-sixth year. He was born at Manchester, Eng., and came to this country when eight years of age. When the Civil War was declared, he, having had a military education, answered the first class for volunteers and enlisted with the 8th Pennsylvania Cavalry which was mustered in with a roving commission. This regiment engaged in more battles than any other regiment, except one. After the war he engaged in the dyeing business and the manufacture of carpets and later manufacturing fine felt hats. For many years he gave his attention to knit goods and was one of the first to engage in the manufacture of ladies' knit underwear and invented several distinctive garments for women. In business and financial circles, of recent years, Mr. Allen was best known as the senior member of the Allen Knitting Mills Co. He was liked by everyone because of his lifelong policy of honesty, his genialty and great optimism. Mr. Allen is survived by two daughters and three sons, the latter of whom, William A., Frank J., and Walter E., have been associated with him in the firm for the past twenty years and will continue the business, of which they possess a thoroughly practical and comprehensive knowledge of all details. Mr. Allen was a very active member of Post 2, G. A. R., of Philadelphia.

Cornelius A. Coleman, treasurer of the Hamilton Woolen Co., Globe Village, Southbridge, Mass., and one of the most prominent men in the textile line, died at his home in Brookline, Mass., February 19. He is survived by a widow and two sons.

Edwin Farnell, president of the Woonsocket Worsted Mill, Woonsocket, R. I., died at his home in that city on February 21. Death was due to bronchitis. Mr. Farnell was 76 years of age and a resident of Woonsocket for twenty-nine years. He had been prominently connected with the industrial interests and progress of the city. He was born in Queensbury, Yorkshire, Eng., in 1839. His wife, Harriet Farnell, died a number of years ago. He is survived by one son and two daughters.

John T. Fiske, a veteran woolen manufacturer of Rhode Island, died at his home in Providence, R. I., February 20 in his sixty-ninth year. For a number of years he resided in Pascoag, R. I., and was a member of the firm of Fiske, Sayles Co. Later the firm name was changed after Mr. Fiske went into business for himself under the name of John T. Fiske, Jr. He continued in manufacturing until he sold out his interest to the American Woolen Co. several years ago.

Alexander F. Melrose, overseer of dyeing at the Patrick-Duluth Woolen Mill, Duluth, Minn., died in the hospital in that city after an illness of a few months. Mr. Melrose was overseer of dyeing at the Peck Mill, Pittsfield, Mass., for a number of years and later went to Amherst, N. S., Canada. He leaves a wife, one son and a daughter. He was born in Scotland and came to this country in 1891. He was a member of the Pilgrim Memorial Church, Odd Fellows, and Clan McInnish of Pittsfield, Mass.

Charles McLeary, Sr., died at the home of his son in Manchester, N. H., at the age of 82 years. He died suddenly after a fainting spell to which he had been subject. He was employed as overseer of dyeing at the E. E. Hilliard Co., Buckland, Conn., for thirty years and retired some years ago. He leaves one son and two daughters.

Pennsylvania, York. The York Knitting Mills Company, operating 675 knitters on seamless cotton hosiery for men, women, children and infants, 108 to 220-needle goods, report that they are working to their fullest capacity, the plant at present being three to four weeks behind in filling its orders. They sell direct.

Pennsylvania, York. The Crystal Hosiery Mills, of which J. A. Lichty is secretary, treasurer and manager, has a fair amount of business on hand for their seamless cotton, 200-needle half hose, which they dye, finish and sell direct. They also make a specialty of dyeing and finishing hosiery for the trade, this department being especially active at this time.

Connecticut, Moosup. Wide looms are being installed in the Moosup Mills of the American Woolen Company for weaving wide heavy overcoatings, a large order for which has recently been received which will require about four months to fill.

Connecticut, Stafford Springs. The Fabyan Woolen Company has awarded the contract to the Eastern Construction Company for a brick addition, 50 by 80 feet, to the boiler house and a brick chimney to be 125 feet high.

*Connecticut, Stafford Springs. The addition to be built to the plant of the Rhode Island Worsted Company will be 42 by 59 feet and will be in the form of another story to the building now used as a dye house. New equipment will be added to the dyeing and finishing departments.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

BUSINESS LITERATURE

Planoidal Fans, Catalogue 200; The Buffalo Forge Co., Buffalo, N. Y.

A 47-page catalogue describing and illustrating the Buffalo planoid fans which are a modification and improvement on the older type of steel plate heating and ventilating fans with a comparatively small number of radial blades. With the improvements in design which have been made, this type of fan will for most conditions compete on an equal basis with the multiblade fans.

Niagara Conoidal Fans, Catalogue 201; Buffalo Forge Co., Buffalo, N. Y.

A very complete description of the Niagara conoidal fans is given in the 63-page catalogue just issued by the Buffalo Forge Co. Besides having all the advantages of the multiblade type of fan in respect to higher operating speeds, more compact arrangement, and greater rigidity, the shape of blades and proportion to the housing used in the Niagara conoidal, make it possible to convert into static pressure the velocity head, which is much higher proportionately to the total pressure with multiblade fans than with older types having few blades.

Buffalo Electric Fans for Blowing, Exhausting, Ventilating, Cooling and Drying; Catalogue 182 E; The Buffalo Forge Co., Buffalo, N. Y.

This catalogue contains a collection for convenient reference of various types of blowers and exhaust fans, which are regularly built for direct connection to motors. This includes everything from large ventilating and drying fans down to the little baby conoidals for ventilating moving picture booths, drying cabinets, etc., and electric blowers for singe forge fires, which take less than half the horse power of an ordinary electric lamp.

Industrial Plants; Charles T. Main, Boston, Mass.

About four years ago Charles T. Main, mill engineer and architect, published a book illustrating some of the work that had been done in his office, and Volume 2, just issued, shows some of the important work accomplished since the previous publication. It consists of handsomely printed views of industrial plants with brief description of some of the interesting features. There is much important textile work included. Among them are the new buildings of the Columbia Rope Co., Nashua Mfg. Co., Stevens Linen Co., Royal Weaving Co., Samoset Worsted Mills, Taft Woolen Co., the power plant for the American Woolen Co.'s Fulton mills, Bigelow Carpet Co., Aspinook Co., new dye house for Stephen Sanford & Sons, Dwight Mfg. Co., Slater & Sons, Ludlow Mfg. Associates, besides many others in different branches of industry. One of the most important hydro-electric developments in the great West has been that of the Great Falls Power Co., at Great Falls, Mont., where 90,000 h. p. is being developed. The dam is 60 feet high and 1,000 feet long. This work is being done in Charles T. Main's Western office at Great Falls, Mont. His organization undertakes work in connection with construction and equipment of industrial plants, including steam and water power developments as well as valuations.

Safety Set Screws; The Allen Mfg. Co., Hartford, Conn.

An illustrated pamphlet describing the Allen safety set screws. These screws are made any diameter from 1/4 in. to 1 1/2 in., also any point, length or size desired. To users of cap screws they recommend their new socket head which is stronger and has many advantages over the old slotted head type. Samples, price lists and discount sheet will be supplied on application to the Allen Mfg. Co.

Important Facts on Industrial Lighting; Westinghouse Lamp Co., 1261 Broadway, New York City.

The Westinghouse Lamp Co. has published this booklet on industrial lighting with special reference to textile work, explaining the bad features of some textile plants and how many present installations can be improved without changing them entirely or going to prohibitory expense. A copy of this booklet may be had upon application at their office.

Toledo Automatic Scales; The Toledo Scale Co., Toledo, O.

A 32-page catalogue describing and illustrating the Toledo automatic scale which does away with loose weights and mental calculations, thereby avoiding errors and saving much time. The Toledo scales are true gravity scales, incorporating the famous Toledo pendulum principle of construction. The results of long specialized experience are evident in the many valuable and distinctive features of these scales. The mechanism is most simple and the number of moving parts is reduced to a minimum.

NORTHROP LOOMS IN THE UNITED STATES

The last issue of "Cotton Chats" issued by the Draper Co. contains an impressive list of Northrop looms in the United States including orders to January 1st, 1915. The grand total amounts to 269,680. There were 18,905 Northrop looms shipped during the year 1914 and on January 1st, 1915, there were orders on hand for 7,337. The largest number used by any one concern is the Pepperell Mfg. Co., which has 7,179. The Harmony Mills have 5,000; Pacific Mills in their different departments 6,237; the Amoskeag Mfg. Co., 7,068. There are 106 mills in the Southern States operating more than 500 looms and 65 mills in the North running more than 500 each.

Industrial Notes

GERMAN LATCH NEEDLES

An impression is abroad that no needles are coming here from Germany. This, however, is not the case as the Continental Latch Needle Company of 120 Liberty St., New York, is receiving weekly shipments from Germany and has a very good stock on hand. E. W. S. Jasper, president of that company, has just received word from the factory at Ebingen that in spite of the fact that 300 of their men are at the front, everything is running smoothly, and the 750 employes not called to the colors are well able to cope with the business received from neutral countries.

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SHIPPING MOTOR TRUCKS ABROAD

Foreign shipments of motor trucks aggregating in value more than $700,000 have been made by the Kissel Motor Car Company of Hartford, Wisconsin. Advices received by the company from abroad and from American agents of European governments indicate that even greater business will soon be placed and that Kissel Kar trucks will be specified in a large portion of it.

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IMPORTANT FAN PATENT DECISION

The patent suit brought against the B. W. Sturtevant Company of Boston by the Sirocco Engineering Company, which has been in the courts for the past six years, has just been decided by the United States Circuit Court of Appeals for the Second Circuit, in favor of the Sturtevant Company.

It was claimed that the Sturtevant Multivane Fan infringed the Sirocco Company's patents, and in the Lower Court their claim was sustained. The Court of Appeals, however, reversed the former decision and held that there was no infringement. The Court of Appeals further decided that the Sirocco patents in suit were void in view of the development of the fan building art prior to the alleged inventions upon which these patents were based.

As there are probably more Multivane Fans in use than any other make, the monetary consideration at stake was large.

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SAVING $55 A DAY

The Minneapolis Steel & Machinery Company of Minneapolis, Minn., has a KisselKar six ton truck and a six ton trailer which shows a net saving over horses of about $55 per day. This outfit will sometimes haul as much as twenty-three tons in a single load. The average load during the period of its service has approximated fifteen tons. It has been in service about ten months and has run more than 9,000 miles. It has been laid up for repairs only once during that period and on that occasion only for ten hours. The original tires are still on the truck.

CLAES & FLENTJE RECEIVE ROYAL MEDAL

The Royal Medal of the Baltic Exhibition at Malmo was awarded to the firm of Claes & Flentje, Muhlhausen i/Thur, Germany. They exhibited in full operation several modern power knitting machines, a full automatic drop lock widening machine for sleeves, a full automatic power driven pearl stitch machine for sport-jackets, and a new full automatic narrowing legger for stocking legs, also some shoemaker and saddlemaker machines from their sewing machine works. The Claes & Flentje Works are leading ones in the knitting machine and sewing machine line—especially leather sewing machines. For forty-six years they have been doing business with all parts of the world.

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RICE'S MILL WHITE

The illustration shows the exhibit of Rice's Mill White for the Panama-Pacific Exposition, which was assembled in the plant of the U. S. Gutta Percha Paint Co., Providence, R. I., before being shipped to San Francisco. Their booklet, "The Yellow Peril," will attract attention on the Pacific Coast.

AN EXHIBIT OF RICE'S MILL WHITE FOR THE PANAMA-PACIFIC EXPOSITION

The name is suggested by the tendency of many white paints to turn yellow with age. Rice's Gloss Mill White does not turn yellow nor chip off.

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SIZEOLEUM

When mixed with Arabol starch, corn starch or potato starch, the sizeoleum, manufactured by The Arabol Mfg. Co., 100 William St., New York, makes a most satisfactory sizing for cotton warps, shirtings, domestic and print cloth warps. It is especially recommended for the South, as it has the advantage of resisting the influences of the climate.

NEW COLOR AND CHEMICAL PLANT

The W. Beckers Aniline & Chemical Works of Brooklyn, N. Y., have purchased, in the outskirts of Brooklyn, a tract of about 15 acres bounded by East 83rd, East 84th and East 85th Sts., Ditmas Ave. and the New York Connecting Railroad, where a large sized chemical plant, consisting of 23 separate buildings, will be erected. It will be remembered that last November the old plant of this concern was destroyed to a large extent by fire, which fire was followed by several explosions, killing two chemists and injuring 36 workmen. The work of the new plant has progressed already in so far as three buildings are finished, the railroad siding being laid into the place and the foundations for the boiler house and chimney have just been started. It is expected that this firm, of which Dr. W. Beckers so far has been sole proprietor, will be incorporated and capitalized at one million dollars.

AMERICAN FLAX

The following report on the American flax supply was prepared by the Bureau of Plant Industry in response to a request for information by Representative J. M. C. Smith, of Washington, D. C., Jan. 25, 1915.

Sir: Your letter of January 14, addressed to the Director of the Census Bureau, requesting information regarding the production of flax and flax tow, has been referred to this department.

The principal States producing flax in this country, together with the acreage devoted to flax in each of these States during the year 1913, are given in the following list:

North Dakota	acres	1,000,000
South Dakota		425,000
Montana		400,000
Minnesota		350,000
Kansas		50,000
Iowa		10,000
Colorado		10,000
Wisconsin		9,000

All of the flax in the States mentioned is grown for seed only. It is flax of seed type, and not of fiber-producing strains. The straw is short and coarse and does not produce fiber suitable for fine spinning. Furthermore, it is sown, harvested, and thrashed in a manner very different from the methods of handling a crop of flax for fiber production. From 1,000 to 2,000 acres of flax are grown annually in the region northwest of Port Huron, Mich., primarily for fiber production. This flax is grown from seed of fiber types and the crop is handled in such a manner as to produce fine spinning fiber similar to that produced in Ireland and in Russia.

Seed-flax straw, including the seed, as it is drawn in the bundle directly from the shock, can probably be purchased in the Dakotas and adjacent States at from $8 to $12 per ton. So far as I am aware, it is not placed on the market in this form at the present time, but five or six years ago several thousand tons were purchased in this condition by the International Flax Twine Co., of St. Paul, Minn.

Fiber-flax straw, including the seed, is purchased in the shock in the field or delivered at the scutching mills in eastern Michigan at $10 to $13.50 per ton. The price of the seed varies with the market price of flaxseed and with the quality of the flax. Fiber flax bears a much smaller proportion of seed and the price varies chiefly with the quality of the straw itself.

Flax tow prepared in the same manner as upholstering tow, suitable for paper making, may be purchased from the tow mills in the seed-flax regions at $18 to $30 per ton. Flax tow composed of carding waste and strippings from flax cards, suitable for making a paper board used in the shoe trade for counters, and commonly known as heel board, is imported from Europe. The ordinary price of this material heretofore has been about $30 per ton, but owing to the scarcity of flax, resulting in the closing of many of the flax-spinning mills, the price of this material is now from $70 to $80 per ton.

The straw of the seed flax, after thrashing, may be purchased in the Dakotas at from $2.50 to $4 per ton loose or about $4 to $6 per ton baled. Straw of the fiber flax is estimated to be worth from $20 to $30 per ton after rippling, thrashing and retting. It is not placed upon the market in this form.

Some of the mills in eastern Massachusetts engaged in the manufacturing of heel board are now beginning to use flax tow from the Northwest to supplement the supplies of carding waste which have been used heretofore, and it is claimed that very satisfactory results are obtained in this manner.

Very respectfully,

Wm. A. Taylor,
Chief of Bureau.

THE PERMUTIT COMPANY

The Stewart Silk Company of Easton, Pa., has ordered two 8 ft. 6 in. diameter water softening filters from The Permutit Company of New York. The entire water supply of the dye house and finishing department will be treated by the Permutit system, which delivers a water absolutely free of the lime and magnesium salts so much dreaded by the silk dyer.

The Stewart Silk Company has made a two years' trial of the lime and soda method of water softening and as a result of their experience have come to the conclusion that this method is not suited to the requirements of the silk manufacturer. They, as well as other silk manufacturers, have found that a lime and soda treated water must be corrected and re-treated before it can be used for silk dyeing.

Easton and the Lehigh Valley district have quite a number of Permutit softeners either in actual operation or in course of installation. The Chipman Knitting Mills of Easton have contracted for a Permutit Softener, which will be installed in their new mill building which is now nearing completion. The Standard Silk Company have had one at their Phillipsburg mill since 1911. John H. Meyer & Company's Reyemdale Dye Works at Northampton, Pa., are long time users of the Permutit system, as is the Lehigh Silk Dyeing Company of Allentown, Pa.

INDUSTRIAL CENSUS OF BUENOS AIRES

Consul General Leo J. Keena, Buenos Aires, Argentina, Dec. 29

According to fragmentary statistics from the Argentine industrial census of June, 1914, now published in the local press, there were at that date 29,690 business houses in the city of Buenos Aires. The proprietorship according to nationality was as follows: Italian, 12,383; Spanish, 7,822; Argentine, 4,358; French, 983; Russian, 768; Turkish, 545; Uruguayan, 404; German, 299; English, 163; Austrian, 132; Hebrew, 100; American, 44; Argentine and foreign, 713; other, 976.

At the same date there were 11,132 industrial establishments in the city, divided according to the nationality of the proprietors as follows: Italian, 4,970; Spanish, 1,869; Argentine, 1,664; French, 694; Russian, 419; Uruguayan, 172; German, 144; Argentine and foreign, 547; American, 7; other, 646.

FREE LECTURES ON TEXTILES

The Textile Club of the Rhode Island School of Design have arranged for a series of lectures on subjects relating to textiles at Memorial Hall, Benefit St., on the following dates: February 18, Development of the Textile Industry," by Prof. Henry B. Gardner; March 8, "Transportation and Packing of Raw and Finished Cotton," by Edw. C. Southwick; March 22, "Story of the Spindle," by Wm. C. Greene; April 19, "Finishing of Cotton Fabrics," by John P. Farnsworth; May 3, "Merchandising of Cotton Fabrics," by Chas. S. Coulter. The lectures begin at 8.15 P. M.

THE GERMAN COAL TAR COLOR INDUSTRY

The coal-tar color and explosives industry as developed by Germany is probably the most highly organized of any industry in the world. Starting with less than a dozen crude raw materials as benzol, tuluol, anthracene, naththalene, carbolic acid, etc., derived from coal tar it builds up by complex chemical processes which often involve elaborate and expensive plant and the most rigid scientific control of operating conditions more than nine hundred separate ultimate products and over three hundred intermediates so called, or over twelve hundred products in all, some of which cannot be turned out commercially in quantities much over 100 lbs. The whole system of production depends for its commercial efficiency upon the close correlation and interdependence of these many products. The industry is self-contained. It makes its own crudes and converts its own wastes into raw materials for new processes to be applied to them by itself. The adjustment of the economic balance is so close that a slight change in the value of some one product may disarrange whole processes and affect disastrously many products. Obviously, therefore, at this stage of its development the industry must be considered as a whole if any effective competitive development in this country is to be attained. The situation is not unlike that now existing in our packing industry, where by rougher methods indeed but on a far greater scale the entire raw material is utilized in a complex series of related products which are individually profitable only because of this relation to the others.

Twenty-two factories are involved in the German dyestuff industry but by far the larger portion of the business is in the hands of four great companies. The industry as a whole is bound together by trade agreements and cooperative arrangements which add greatly to the efficiency of production.

A few figures regarding one of these companies are instructive. For transportation within the plant it utilizes 42 miles of railroad. Its water works supply 10 billion gallons yearly and its ice factory 12,000 tons of ice. It has four hundred steam engines, five hundred electric motors, nearly as many telephone stations, and 25 steam fire engines. It has a frontage on the Rhine of one and a half miles and handles sulphuric acid in tank steamers. Seven years ago it employed 217 chemists, 142 civil engineers, 8,000 workmen, and a commercial staff of 918. Perhaps even more important from the present point of view of the American business man is this significant statement published by this company.

"On looking back upon the successes which the Badische Anilin und Soda Fabrik has achieved since its foundation the management feel it to be their pleasant duty to remember gratefully the benevolent and appreciative support which their efforts have always met at the hands of the State authorities."—From an address by Arthur D. Little before the U. S. Chamber of Commerce at Washington, D. C.

PASSING OF A COUNTRY WOOLEN MILL

The Ilginfritz Woolen Mill that was at one time one of the busiest places in Greencastle, where the hum of the machinery and the dripping of the water wheel could be heard all over the place, is now silent and desolate, with not even the sound of a human voice to mar the unbroken stillness, and the twitter of the birds is the only sign of life about the old house and mill. Years ago the late George Ilginfritz conducted a woolen mill in the building, and the persons came from all throughout the valley to have him weave for them a pair of fine blankets, or a gay rag carpet. His fame as a weaver spread rapidly, and there is hardly a home in Greencastle today that does not contain a piece of his workmanship. Mr. Ilginfritz lived alone with his sister, and their yard surrounding the house and mill was their great pride. It was arranged almost like a park. They had the only fountain in Greencastle, and a wonderful collection of gold fish. In the cool of a summer's evening, one of the greatest diversions for the young people of the town was a walk to "Ilginfritz's Fountain," where they would wander through the well kept lawn, and Mr. Ilginfritz would feed the gold fish for them, and treat them to apples from his "Summer Rambo."

As a reward for good behavior children were frequently promised a trip to the "Fountain." And there was never a Sunday evening that Mr. Ilginfritz and his sister did not have a number of visitors, including gray haired men and women, maidens with their sweethearts, mothers and fathers

with a large sprinkling of "small fry." But as the years flew by mills with modern machinery took the place of the old time weaving, and the place assumed a more quiet aspect. About five years ago Mr. Ilginfritz died, but his sister still lived on the old home which was sold to the Pennsylvania Pure Milks Products Co. This company did not operate the mill, and since the death of Miss Ilginfritz in January, 1914, the old homestead has been vacant. The well kept yard is now overgrown with weeds, the fountain is still, the water wheel rotting away, and the house and mill weather beaten and worn from the ravages of time.—Chambersburg (Pa.) Repositor.

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BUTTONHOLES

Buyers of underwear today are demanding a better buttonhole than the cheap, sloppy type that has too often been used. A neat perfect buttonhole improves the salable and wearable quality of the goods.

The Reece hand-hole button-hole machine produces an imitation hand buttonhole of the quality desired. It can be used not only for underwear, but on all kinds of knit goods and sweater work with or without canvas and other staying devices. This machine stitches and cuts the buttonhole, is simple and speedy, easily operated and makes a perfect one or two cord buttonhole, stronger, more uniform and better looking than the ordinary hand made hole. Manufacturers claim for it a capacity of twice that of any other buttonhole machine. It is built by the Reece Buttonhole Machine Co., 500 Harrison Ave., Boston, Mass.

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DYEINGS ON WORSTED FABRICS WITH ARTIFICIAL SILK SHOTS

This is the title of a new shade card that has just been issued by the Cassella Color Company, New York, showing a very extensive range of very fashionable shades that will, without doubt, appeal to the fabrics designer as well as the dyer and colorist.

In the series of 108 dyeings are to be found many shades, with contrasting effects produced by the judicious weaving of artificial silk, that will at once attract general attention. Several methods of dyeing are described with a degree of competency that leaves nothing to be desired, while the suggestions as to the choice of dyestuffs for both dyeing and shading are very full.

Although the present time may not be the most opportune to consider dyestuffs, yet it is the alert dyer who is on the lookout for new combinations and color suggestions that takes advantage of such circumstances as the present to prepare for the future.

It has never been so busy as during the past year, and an extra force is now at work at night. The Reece machinery is taking on a larger variety in several departments, and in the various trades wherein buttonholes are a feature the Reece machines are the standard, in this country and in Europe.

FOREIGN TRADE OPPORTUNITIES

The Bureau of Foreign and Domestic Commerce has published the following items regarding opportunities for foreign business in textile materials. Reserved addresses may be obtained from the Bureau and its branch offices. Request for each opportunity should be on a separate sheet and the file number given.

Textiles, foodstuffs, etc., No. 15477: A German salesman in South America has informed an American consular officer that he desires to represent a limited number of reliable American manufacturers and exporters of cotton prints, cheap suitings, brocades, bedcovers, sheetings and towels; silk socks and stockings, neckties, suspenders, belts, and undershirts; women's clothing, linen, combs, fans, etc., shoes; also canned goods; enameled ware; printing and packing paper and office accessories; canvas goods, bags, and machinery.

Piece goods, boots and shoes, etc. No. 15489: An American consular officer in the Far East reports the name and address of a Chinese merchant who wishes to communicate with American firms which may be interested in the import and export trade of Manchuria and China. He is particularly interesting in importing American piece goods, boots and shoes, hardware, agricultural machinery, dried and canned fruits, chemcals and drugs, and toilet articles. In return he wishes to export to the United States soy beans, raw silk, hides and sheepskins, furs, ducks' feathers, and general Chinese products. It is stated that he can furnish satisfactory bank references.

Cotton yarns, No. 15486: An American consular officer in Latin America reports that a knitting mill in his district desires to purchase No. 7 cotton yarn, about 80 per cent. waste, of 18 twist per inch, and of 22 twist per inch, to be used for manufacturing cotton wrapping twine. The firm is also in the market for cotton yarn for hosiery, and desires to receive samples and prices.

Gloves, linings, and table oilcloths, etc., No. 15484: An American consular officer in Canada reports that a business man in his district desires to secure agencies for silk and leather gloves, silk ribbons, cotton canvas for clothing manufacturers, pocketings and sleeve linings, white and gray cotton cloths, ginghams, and table oilcloths. Samples of the canvas, pocketing material, and sleeve linings may be seen at the Bureau of Foreign and Domestic Commerce or its branch offices. References are given.

Envelopes and hosiery, No. 15493: The Bureau of Foreign and Domestic Commerce is in receipt of a communication from the American representative of a South American commercial house stating that his firm wishes to get in touch with manufacturers of "window" en-

velopes and hosiery. Correspondence may be in the English language, and should be addressed to the representative in the United States and to the firm in South America.

Woolen and cotton fabrics, tablecloths, etc., No. 15495: A business man in France has informed an American consular officer that he desires to secure an agency for the sale of American knit goods, woolen and cotton fabrics, tablecloths, upholsterer's goods, and similar lines.

Flannels and flannelettes, etc., No. 15497: A firm of commission agents in Europe has informed an American consular officer that it wishes to establish an agency for the sale of American-made flannels and flannelettes, woolen cloths, and machinery for the manufacture of woven materials. It is desired to represent on a commission basis.

Ready-made clothing for women and children, etc., No. 15503: A commission agent in France has informed an American consul that he desires to establish an agency for the sale of American goods. He is interested in ready-made clothing for women and children, metal clasps and fasteners for women's hand bags, traveling bags, etc. An exclusive agency is desired.

Hosiery yarns, thread, etc., No. 15511: A merchant in a French port has informed an American consular officer that he desires to represent American manufacturers of hosiery, gloves and underwear for women; hosiery yarns; and linen and cotton sewing thread. Correspondence should be in French, and quotations given c. i. f. destination in French currency.

Cotton, machinery, shoes, etc., No. 15512: An agent in Italy has asked an American consular officer to put him in touch with American exporters who may be seeking a representative in Italy. The agent's experience covers a general line of merchandise, cotton, machinery, shoes, and hides. References are given. Correspondence may be conducted in English, French or Italian.

Hosiery and shirt waists for women, No. 15516: A firm in Great Britain has informed an American consul that it is desirous of getting into communication with American manufacturers of hosiery and shirt waists for women. It is desired to represent on a commission basis. It is stated that foreign and American references will be furnished.

Knitting machinery and needles, No. 15517: A manufacturer in Spain has informed an American consular officer that he desires to receive catalogues, price lists, etc., from American manufacturers of knitting machines and parts and needles for making fine silk hosiery. It is desired to purchase machines for knitting underwear and hosiery of silk, wool, and cotton. It is stated that samples of the needles are being forwarded. When the samples arrive they will be placed on file at the various branch offices of the Bureau for inspection. Correspondence may be in English.

"Winding" boards for woolen goods, No. 15518: An American consul in the United Kingdom has received an inquiry from a firm in his district for "winding" boards for woolen goods. The principal sizes required are 28, 29 and 30 inches.

Cotton sheeting, No. 15519: A firm in Europe has informed an American consular officer that he wishes to receive c. i. f. quotations, by cable, for cotton sheeting of a specified quality. It is stated that a sample of the material is being forwarded. When the sample arrives it may be inspected at the Bureau of Foreign and Domestic Commerce and its branch offices.

Absorbent and nonabsorbent cotton and gauze, No. 15533: An American consul in Europe reports the name and address of a firm in his district which wishes to represent American manufacturers of, or dealers in, absorbent and nonabsorbent cotton and gauze. Quotations should be given c. i. f. port of delivery. It is stated that the firm desires to place large contracts.

Underwear and hosiery, No. 15531: The commercial agent of the Bureau of Foreign and Domestic Commerce at New York City reports that he is in receipt of a letter from a firm in that city stating that one of its customers in Australia is in the market for 10,000 dozen suits of underwear for women (straights at prices from 55 to 85 cents per dozen, and shaped at prices from 75 cents to $1.12 1/2 per dozen), and large quantities of shot and clock hosiery for women. Prices should be quoted f. o. b. New York. The matter should be taken up with the firm in New York which is the sole buyer in this country for the Australian firm.

Cotton and silk hosiery, No. 15548: A business man in Canada has informed an American consul that he wishes to be put in touch with American manufacturers of cotton and silk hosiery. He wishes to secure an agency. Reference is given.

Looms and supplies and cotton thread, No. 15549: An American consular officer in Europe reports that a firm in his district wishes to correspond with American manufacturers of looms for making heavy cloth similar to the samples which may be inspected at the Bureau of Foreign and Domestic Commerce or its branch offices. The firm also wishes to purchase cotton thread in skeins. The sizes desired are Nos. 8/2, 9/2, 10/2 and 10/3.

Cotton and linen fabrics, hosiery, and sewing thread, etc., No. 155550: An agent in Europe has informed an American consular officer that he wishes to establish an agency for the sale of American woolens and worsteds, cotton and linen fabrics, hosiery, and sewing thread.

Underwear and hosiery, No. 15560: An American consular officer in the United Kingdom reports that a business man in his district is desirous of representing, on a commission basis only, manufacturers of ribbed and woven underwear, hosiery, woven petticoats, and knick-

ers for women and children. Reference is given.

Woolen yarns, No. 15557: A business man in Canada has requested an American consular officer to put him in touch with manufacturers of or dealers in woolen yarns suitable for making hose. It is stated that the man intends establishing a hosiery knitting plant.

Tarpaulins, etc., No. 15564: An American consular officer in one of the neutral European countries reports that a business man in his district is anxious to purchase materials made in whole or in part of hemp, linen, or cotton yarns which can be used in the manufacture of heavy waterproof cloth, such as tarpaulin, etc. It is stated that this man purchases about $50,000 yards of these materials annually. Foreign and American references are given. Correspondence should be in English.

TREASURY DECISIONS

T. D. 35095. February 1, 1915. Wool blankets —Lap robes. So-called blankets of wool to be continued to be assessed with duty as wool cloth or manufactures of wool. Pending a judicial determination of the question, therefore, you will continue to assess duty on wool lap robes as wool cloth or manufactures of wool, assessing such duty on importations and withdrawals made on and after January 1, 1914, at the rate of 35 per cent. ad valorem under paragraph 288 of the tariff act of October 3, 1913.

T. D. 35101. January 27, 1915. Turkish towels in the piece. Turkish towels in the piece woven in patterns in such a manner that each towel is distinctly set forth and a few plain threads are inserted at regular intervals showing where the articles are to be cut apart, are dutiable as "towels . . . made of cotton", under paragraph 264 of the act of 1913 and not under the provisions for cotton cloth in paragraph 252 and 253. In the matter of protest 750609 of Knauth, Nachod & Kuhne against the assessment of duty by the collector of customs at the port of New York.

T. D. 35104. January 29, 1915. Wool—Five per cent. discount. 1. The proviso in paragraph 650 of the act of 1913, providing that "this paragraph shall be effective on and after the first day of December, 1913, until which time the rates of duty now provided by schedule K of the existing law shall remain in full force and effect," was designed to continue the rates upon wool as part of the new act until the 1st of December, 1913. Consequently, wool which was withdrawn from warehouse and entered between said dates was properly classified at the rate provided by paragraph 370 of the act of 1909. And a claim by the importer that there was no wool schedule between said dates, and that consequently this importation should be assessed as a nonenumerated article is overruled. 2. Importations made prior to the passage of the act of 1913 are not within the purpose of Congress in enacting the 5 per cent. discount provision. In the matter of protest 740068 of Abbott Worsted Co., against the assessment of duty by the collector of customs at the port of Boston.

T. D. 35116. February 5, 1915. Drawback on veiling. Drawback on embroidered, chenilled, and edged ladies' veiling manufactured by Louis Hamburger & Co., New York, with the use of imported plain veilings, nettings, muslin de soie and marabau.

T. D. 35121. February 4, 1915. Hatters' plush. Black plush composed in chief value of silk and known commercially as "hatters' plush" is properly dutiable at the rate of 10 per cent. ad valorem under paragraph 382, tariff act of 1913, irrespective of its width, unless its width is such as will exclude it from that class or kind of hatters' plush "such as is used for making men's hats". In the matter of protest 760619 of C. A. Haynes & Co., against the assessment of duty by the collector of customs at the port of New York.

T. D. 35126. February 12, 1915. Jute thread waste. Appeal directed from decision of the Board of United States General Appraisers of December 21, 1914, G. A. 7652 (T. D. 35015), involving the classification of certain jute thread waste.

T. D. 35139. Feb. 15, 1915. Cotton nettings. Nettings, curtains, jacquard figured upholstery goods. Cotton nettings measuring from 38 to 46 inches in width and from 4 to 50 yards in length and having figures introduced by the jacquard process, and which are not only suitable for making window curtains but can also be used for making other articles are more specifically provided for as "nettings . . . of whatever yarns, threads, or filaments composed," under paragraph 358, tariff act of 1913,, than as "Jacquard figured upholstery goods composed wholly or in chief value of cotton," or as "Jacquard figured manufactures of cotton," under paragraph 258 of said act. In the matter of protest 752186 of E. C. Carter & Son against the assessment of duty by the collector of customs at the port of New York.

T. D. 35140—G. A. 7686. Feb. 15, 1915. Laces, nettings, beadings. Nettings, etc.—Jacquard figured manufactures of cotton. Cotton nettings, flouncings, edgings, and insertings, which have figures introduced by the jacquard process, are properly dutiable under the eo nomine provision for such articles in paragraph 358, tariff act of 1913, and not as "Jacquard figured manufactures of cotton" under paragraph 258. Laces—Beadings —Fabrics with fast edges. Jacquard figured cotton articles made from Valenciennes lace, although recognized as beadings to distinguish them from edgings or some other article, fall within that class of articles known in the trade as "laces," and as such are more specifically provided for as "laces" under paragraph 358, tariff act of 1913, than as "Jacquard figured manufactures of cotton" under paragraph 258, or as "fabrics with fast edges not exceeding 12 inches in width" under paragraph 262. In the matter of protest 7442248 of P. K. Wilson & Son against the assessment of duty by the collector of customs at the port of New York.

Recent Textile Patents

CLOTH CUTTING Machine. 1,125,434. Morton Arendt, New York.

BED FABRIC. 1,128,581. John Burns, Kenosha, Wis.

BRAIDING MACHINE Carrier. 1,124,480. Arlon Littlefield, Providence, R. I.

BRAIDING MACHINE Thread Carrier. 1,125,651. John B. Chace, South Attleboro, Mass.

BOBBIN-COP. 1,124,448. Charles A. Hunt, Jr., Lexington, N. C.

BOBBIN-WINDING Machine, Variable-speed. 1,126,317. Thomas Thompson, Pawtucket, R. I.

FABRIC DRYING Machine. 1,125,707. Bertrand A. Parkes, Philadelphia, Pa.

FABRIC-FRAME-MOTION Mechanism. 1,127,148. Robert Zahn, Plauen, Germany.

FIBROUS MATERIALS, Manufacturing Stratified. 1,124,777. Max Meirowsky, Cologne-Lindenthal, Germany.

FLAX FELT, Producing. 1,125,347. James E. Lappen, Le Roy, Minn.

DOFFER. 1,127,674. Burt A. Peterson, Rockford, Ill.

DYEING and Like Treatment of Textile Material, Apparatus for. 1,125,803. John Brandwood, Bury, Eng.

DYEING MACHINE, Circulating Rotary. 1,125,497. George E. Drum, Philadelphia, Pa.

DYEING MECHANISM. 1,125,747. Walter W. Sibson, Philadelphia, Pa.

DYESTUFFS on the Fiber by Means of the One-Bath Method, Producing. 1,127,027. Felix Kunert, Frankfort-on-the-Main, Germany.

KNIT STOCKING or Other Garment and Knitting the Same, Welted. 1,125,190. Robert W. Scott, Boston, Mass.

KNITTING MACHINE. 1,127,335. Frank B. Wildman, Norristown, Pa.

KNITTED WEBS, Transferring. 1,127,337. Louis N. D. Williams, Ogontz, Pa.

KNITTING MACHINE. 1,127,283. Wolfgang Richter, Philadelphia, Pa.

KNITTING MACHINE, Circular. 1,127,766. Harry A. Houseman, Philadelphia, Pa.

KNITTING MACHINE, Circular. 1,127,767. Harry A. Houseman, Philadelphia, Pa.

KNITTING MACHINE, Circular. 1,127,768. Harry A. Houseman, Philadelphia, Pa.

KNITTING MACHINE, Circular. 1,127,769. Harry A. Houseman, Philadelphia, Pa.

KNITTING MACHINE Needle. 1,127,132. Andrew P. Watt, Manchester, N. H.

LOOM. 1,128,872. John M. Holladay, Holladay, Va.

LOOM ATTACHMENT. 1,125,843. Ernest Hall, Kannapolis, N. C.

LOOM, Pile Fabric. 1,126,714. George Crossland, Reynoldsville, Pa.

LOOM LET-OFF. 1,124,465. Louis H. Landry, Uxbridge, Mass.

LOOM FEELER Motion. 1,127,086. Henry A. Woens, Whitinsville, Mass.

LOOM, Filling-Replenishing. 1,124,527. Alonzo E. Rhoades, Hopedale, Mass.

LOOM. 1,126,391. Augustin J. Chevrette, Worcester, Mass.

LOOM, Weaving. 1,217,601. Robert and James Dantzer, Lille, France.

LAMINATED FABRIC, Wear-Resisting. 1,126,648. Isabel R. Y. Marble, Newport, R. I.

LOOM for Weaving Tubular Ties Having Reinforcements at the Knot-Tying Spaces, Cam Mechanism for. 1,128,821. Charles Seidman, Philadelphia, Pa.

LOOMS, Temple-Cutter for Automatic Weft-Replenishing. 1,128,440. William Gerrard, Blackburn, Eng.

LOOM-PICKER. 1,126,582. Howard Sillcocks, Newark, N. J.

SPINNING and Like Machines, Spindle Support for. 1,125,700. Alfred A. Lovejoy, Lowell, Mass.

SELVAGING DEVICE. 1,124,261. John W. Beard, Sumbury, Pa.

SHUTTLE. 1,127,937. Lewis P. Spencer, New Bedford, Mass.

SPINNING COTTON and Apparatus Therefor. 1,128,193. William T. Smith, Bolton, Eng.

SPINNING and Twisting Machine, Flier. 1,124,476. Hermann C. Lerch, Amerika-on-the-Mulde, Germany.

SPINNING, Preparing Bast Fiber Such as Flax or Hemp for. 1,127,311. Bertrand S. Summers, Port Huron, Mich.

STITCH-CHAIN-FORMING Machine. 1,127,338. Louis N. D. Williams, Ogontz, Pa.

SHUTTLE TENSION Device. 1,128,651. Fred Ashworth, Beverly, Mass.

SPINNING MACHINE. 1,128,462. Otto J. Kuestner, Chicago, Ill.

SPINNING MACHINE. 1,124,672. Alfred Stell, Keighley, Eng.

UNDERGARMENT. 1,124,485. William Marlow, Brooklyn, N. Y.

UNDERGARMENT. 1,128,213. Frances N. Workman, Los Angeles, Cal.

WATERPROOF Composition. 1,127,181. Charles W. Bullock, Buffalo, N. Y.

WARP-TENSIONING Device. 1,124,878. Emil Ebell, Neuruppin, Germany.

WINDING MACHINE. 1,126,808. John O. McKean, Westfield, Mass.

WINDING MACHINE. 1,126,809. John O. McKean, Westfield, Mass.

WINDING MACHINE Stop Mechanism. 1,124,260. Warren E. Beadle, Brokaw, Wis.

WOVEN FABRIC with Widening, Tubular. 1,129,037. Victor H. Jennings, Worcester, Mass.

YARN, Method and Apparatus for Producing Core. 1,124,863. William E. Clogher, Mankato, Minn.

TRADE MARKS RECENTLY FILED FOR REGISTRATION

82,785. Yarns, threads, etc. Mark: Red. Owner: Howard Mfg. Co., Boston, Mass.

68,311. Thread. Mark: Rugby. Owner: John C. Meyer, Lowell, Mass.

79,575. Absorbent cotton. Mark: Curity. Owner: Lewis Mfg. Co., Walpole, Mass.

82,538. Woolen piece goods and blankets. Mark: Faribo. Owner: Faribault Woolen Mill Co., Faribault, Minn.

82,961. Hosiery. Mark: "Thyme". Owner: James Risk & Co., New York.

79,630. Petticoats. Mark: "Klosfit". Owner: Greenwald Bros., Philadelphia, Pa.

79,665. Cotton piece goods. Mark: O. K. Owner: Grinnell Willis & Co., New York.

80,028. Cotton yarns. Mark: Homespun. Owner: Holmes Mfg. Co., New Bedford, Mass.

81,106. Table damask. Mark: Flower of the Flax. Owner: Sears, Roebuck & Co., Chicago, Ill.

82,136. Handkerchiefs. Mark: Chisca. Owner: Herrmann, Aukam & Co., New York.

82,442. Silks. Mark: Vera Silks. Owner: Joseph Hirsch & Sons, New York.

82,737. Mercerized cotton yarns. Mark: Cynthiana. Owner: Harding, Tilton & Co., Boston, Mass.

82,940. Cotton, linen, woolen and silk piece goods. Mark: Springdale. Owner: John H. Meyer & Co., New York.

82,958. Cotton piece goods. Mark: Geisha. Owner: Chas. L. Poor Co., New York.

82,950. Cotton piece goods. Mark: Cho-Sen Owner: Chas. L. Poor Co., New York.

65,014. Stockings. Mark: 909. Owner: O'Callaghan & Fedden, New York.

73,040. Ladies' coats and outer suits. Mark: Jewel. Owner: Carson, Pirie, Scott & Co., Chicago, Ill.

80,132. Handkerchiefs, embroidered linens, etc. Mark: "Crindale". Owner: Henry Matier & Co., Belfast, Ireland.

80,407. Ladies' and misses' dresses. Mark: Rosegold. Owner: Rosegold Mfg. Co., Worcester, Mass.

80,746. Serges. Mark: Famous King Serge. Owner: Philip Katz, New York.

81,486. Men's shirts. Mark: Argo. Owner: A. Goldstein & Co., New York.

81,698. Capes, cloaks, wraps, etc. Mark: Furette. Owner: The Salts Textile Mfg. Co., Bridgeport, Conn.

81,782. Men's shirts. Mark: Steeple above all. Owner: Berkowitz Bros., New York.

73,210. Alsatian braids. Mark: D-M-C. Owner: Dollfus-Mieg & Cie, Mulhouse, Germany.

77,164. Hosiery. Mark: Dick and Dot. Owner: Taubel Bros., Philadelphia, Pa.

78,829. Articles of clothing. Mark: Astra. Owner: Frederick Doble & Sons, London, Eng.

80,131. Linen piece goods. Mark: Erindale. Owner: Henry Matier & Co., Belfast, Ireland.

80,441. Cotton, linen and wool piece goods. Mark: Society. Owner: Rice-Stix Dry Goods Co., St. Louis, Mo.

80,588. Woolen, cotton, silk, etc., piece goods. Mark: Grakel. Owner: Grant S. Kelley, New York.

80,598. Textile rugs. Mark: Keystone. Owner: F. G. Rogers & Co., Philadelphia, Pa.

80,643. Tapestries. Mark: Harco. Owner: George S. Harrington Co., Boston, Mass.

80,670. Hosiery. Mark: Path Finder. Owner: Stork Bros., Adamstown, Pa.

80,720. Tapes and bindings. Mark: 505. Owner: The Bias Narrow Fabric Co., Bridgeport, Conn.

80,721. Tapes and bindings. Marks: B. N. F. Owner: The Bias Narrow Fabrics Co., Bridgeport, Conn.

80,722. Tapes and bindings. Mark: 1000. Owner: The Bias Narrow Fabric Co., Bridgeport, Conn.

81,103. Satin piece goods. Mark: Paradise Owner: Susquehanna Silk Mills, New York.

81,123. Bleached cotton sheetings. Mark: Hollywood Bleachery. Owner: Wilson & Bradbury, Philadelphia, Pa.

81,146. Cotton piece goods. Mark: Sarco fabrics. Owner: Schwabach & Raphael, New York.

81,427. Silk piece goods. Mark: Color Craft. Owner: Mannville Co., Providence, R. I.

81,391. Embroidery threads. Mark: Brillio. Owner: The Winsted Silk Co., Winsted, Conn.

81,645. Cotton piece goods. Mark: Dahlia. Owner: The Millville Mfg. Co., Philadelphia, Pa.

81,920. Handkerchiefs. Mark: Peek-a-Boo. Owner: Titus Blatter & Co., New York.

81,921. Handkerchiefs. Mark: Bo-Peep. Owner: Titus Blatter & Co., New York.

71,958. Sweaters. Mark: Polar Bear. Owner: Treinis Bros., New York.

73,124. Velvets. Mark: J. B. D. Owner: J. B. David, St. Etienne, France.

73,125. Velvets. Mark: Best Wove. Owner: J. B. David, St. Etienne, France.

79,675. Ribbons. Mark: U. R. T. Owner: Ulrik R. T. Lund, North Catasauqua, Pa.

80,498. Woven and knitted underwear. Mark: Kel-Vent. Owner: George W. Kelly, Chicago, Ill.

65,149. Clothing. Owner: Western Hat & Mfg. Co., Milwaukee, Wis.

77,450. Knitted washcloths and towels. Mark: Turknit. Owner: Putnam Knitting Co., Cohoes, N. Y.

82,439. Hosiery. Mark: Caroknit. Owner: Carolina Mills Co., Winston-Salem, N. C.

C. E. RILEY COMPANY

65 Franklin Street, .. BOSTON, MASS.

COTTON AND COTTON GOODS YARNS

DIRECT IMPORTERS OF EGYPTIAN COTTON

COTTON WOOLEN WORSTED MACHINERY

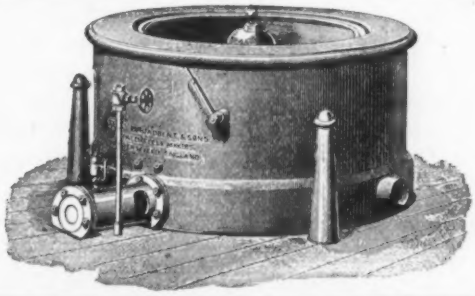
Thomas Broadbent & Sons,

Huddersfield, Eng.

PATENT DIRECT STEAM DRIVEN

HYDRO-EXTRACTORS

OVER 3500 IN USE. ALSO ELECTRICALLY DRIVEN



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ORIGINATORS, PIONEERS AND LEADERS
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DURABLE K-W UNIVERSALLY USED

THE fact that Klauder-Weldon machines have always been recognized as the standard of economic efficiency in Dyeing, Bleaching and Scouring is sufficient reason to believe that they have merits that justify your most careful investigation.

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SOLD ON SIXTY DAYS TRIAL

KLAUDER-WELDON DYEING MACHINE COMPANY
AMSTERDAM, N. Y., U. S. A.
Foreign Plant - - HUDDERSFIELD, ENGLAND

ONE REASON WHY

GARLAND RAWHIDE LOOM PICKERS

are used in so many progressive mills:

We do not know how to improve the *hide quality* of our rawhide loom pickers for we are using the best hides which we can buy,—not only hides of well known brands, but the *first selection* from these brands as they go through the curing process. We are positive that no better hides are used anywhere in the world for picker purposes, than the hides of which our rawhide loom pickers are made.

A trial will prove to you all we claim.

GARLAND MFG. CO.
SACO, MAINE

G TRADE MARK

Buyers' Index

This department is conducted for the benefit of our subscribers. The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisements. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in the classification here given such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources. Advertisers whose names do not appear under headings to which they are entitled will please notify the publishers.

Absorbent Cotton Wool Machinery.
Tatham, William, Ltd.

Air Moistening System.
——See Humidifying Apparatus.

Albone.
Roessler & Hasslacher Chemical Co.

Architects and Mill Engineers.
Cramer, Stuart W.
Dyer, W E S.
Ferguson, John W.
Main, Charles T.
Myrick, J. W. H.

Asbestos Covering.
Johns-Manville Co., H. W.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Saco-Lowell Shops.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Mch. Co.
Woonsocket Machine & Press Co.

Back Filling.
International Pulp Co.

Bale Presses.
Saco-Lowell Shops.

Baling Presses.
Boomer & Boschert Press Co.
Philadelphia Drying Mchy, Co.
Smith & Furbush Mch. Co.

Ballers.
Saco-Lowell Shops.

Ball Bearings.
S. K. F. Ball Bearing Co.

Bandings.
Lambeth Rope Corporation.
Sternberg, Fred, & Co.

Baskets.
Diamond State Fibre Co.
Lane, W. T., & Bro.
Standard Fibre Co.

Beamers.
Crompton & Knowles Loom Works.

Bearings.
——See Ball Bearings and Roller Bearings.

Belting.
Bond, Charles, Co.
Gandy Belting Co.
Graton & Knight Mfg. Co.
Hood, R. H., Co.
Johns-Manville Co., H. W.
Schieren, Chas. A., Co.
Williams, I. B., & Sons.
——See also Mill Supplies.

Belting, Leather.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belting, Link.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Cement.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Dressing.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.
Stephenson Mfg. Co.

Belt Lacing, Leather.
Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Belt Tighteners.
Brown, A. & F., Co.
Hunter, James, Machine Co.

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Bleaching Kiers.
Arlington Machine Works.
Birch Bros. (Albert Birch, prop.).
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
New England Tank & Tower Co.
Philadelphia Drying Machinery Co.
Stearns Lumber Co., A. T.
Textile-Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Electro Bleaching Gas Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co., The.
Wolf, Jacques & Co.
Worden Chemical Works.

Blowers and Blower Systems.
Autoforce Ventilating System.
Buffalo Forge Co.
Carrier Air Conditioning Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Kunze, Otto.
Leigh & Butler.
Shambow Shuttle Co.
Tebbets, E. L., & Co.

Bobbin Winders.
Altemus, J. K.
Lever, Oswald, Co.
Universal Winding Co.

Boilers.
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Books.
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Boxes, Box Shooks, Etc.
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Pearson, J. T.
Standard Fibre Co.

Braiding Machinery.
New England Butt Co.
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Bridges.
Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Cocker, M., & Co.
Felton, S. A., & Son Co.
Mason Brush Works.

Brushing Machines.
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Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

Button-Hole Machines.
Reece Button-Hole Machine Co.

Button Sewing Machines.
Union Button Sewing Co.

Calico Printers' Machinery and Supplies.
Arlington Machine Works.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Mch. & Iron Works.
Schwartz, L. H. A., & Co.
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Textile-Finishing Machinery Co.
——See also Dyeing, Drying, Bleaching, Machinery, etc.

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Lane, W. T., & Bro.

Cap Spindles.
Am. Textile Specialty Mchy. Co.

Carbonizing Machinery.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
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Tolhurst Machine Works.

Card Clothing.
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Atkinson, Haserick & Co.
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Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.

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Smith & Furbush Machine Co.

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Philadelphia Textile Machinery Co.
Smith & Furbush Machine Co.
Textile-Finishing Machinery Co.

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Castings.
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Lunkenheimer Co., The.
Royersford Foundry & Machine Co.
Schofield, Wm., Co.

Caustic Soda.
Wing & Evans.

Cement Pans.
Scaife, W. B., & Sons.

Centrifugal Filters.
Wayte, W. J., Inc.

Centrifugal Machines.
Wayte, W. J., Inc.

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Chains, Power Transmission.
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Richardson Brothers.
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Cloth Winders.
Firsching, J. A.
Clutches.
Brown, A. & F., Co.
Decatur Fndry, Furnace & Mch. Co.
Hunter, James, Machine Co.
Coal Analysis.
Little, A. D., Inc.
Collars (Shaft).
Royersford Foundry & Machine Co.
Comb Aprons.
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Combs (Wool and Cotton).
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Crompton & Knowles Loom Works.
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Kissel Motor Car Co.
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Copper Print Rollers.
Taunton-New Bedford Copper Co.
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Badger, E. B., & Sons Co.
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Wildman Mfg. Co.
Woonsocket Machine & Press Co.
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Leigh & Butler.
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National Scale Co.
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H. & B. American Machine Co.
Metallic Drawing Roll Co.
Drinking Fountains.
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Morse Chain Co.
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Brown, Wm., Sons.
Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Brophy's, T., Sons.
Davidson, John F.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Wks.
National Silk Dyeing Co.
Peerless Co.
Utica Willowvale Bleaching Co.
Dyeing, Drying, Bleaching and Finishing Machinery.
Arlington Machine Works.
Autoforce Ventilating System.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Mach. Wks.
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Craw, J. W., Mchny. Co.
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Giles, J. H., Dyeing Machine Co.
Heathcote, John, & Son.
Hunt, Rodney, Mach. Co.
Hunter, James, Machine Co.
Hussong Dyeing Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Mch. Co.
Klipstein, A., & Co.
Leigh & Butler.
Leyland, Thos., & Co.
Manufacturers Machine Co.
National Laundry Machinery Co.
Perkins, B. F., & Son, Inc.
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Philadelphia Textile Machinery Co.
Reliance Machine Works.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
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Sturtevant, B. F., Co. (Drying).
Suter, Alfred.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.
Uniform Dyeing Machine Co.
U. S. Hoffman Co.
Dye House Cans.
Diamond State Fibre Co.
Hill, James, Mfg. Co.
Dye House Trucks.
Bailey, Frank.
Diamond State Fibre Co.
New England Tank & Tower Co.
Dye Kettles.
New England Tank & Tower Co.
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Dye Sticks.
Bailey, Frank
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New England Tank & Tower Co.
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Badische Co.
Bayer Co., The, Inc.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Electro Bleaching Gas Co.
Farbwerke-Hoechst Co.
Ford, J. B., Co.
Geisenheimer & Co.
Harding & Fancourt, Inc.
Holliday, Read & Sons.
Innis Speiden & Co.
Johnson, Chas. A., & Co.
Kalle Color & Chemical Co., Inc.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Roessler & Hasslacher Chemical Co
Seydel Mfg. Co.
Stein, Hirsch & Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
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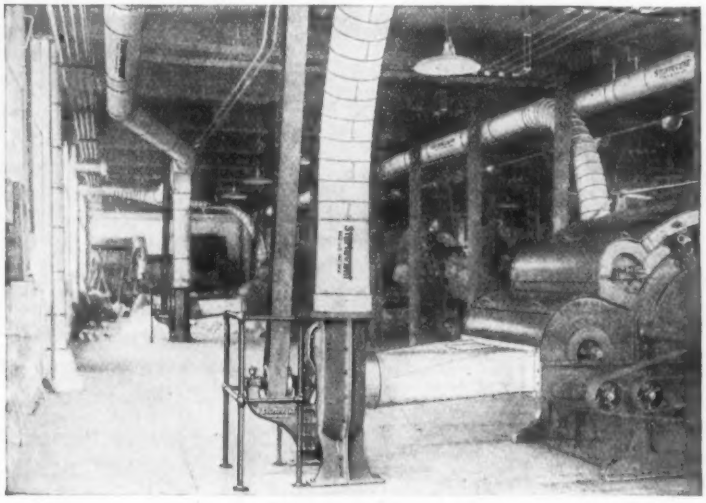
Edgings.
——See Tapes, Braids and Edgings.

Alphabetical Index to Advertisers, with page numbers, follows this list.



Fans and Conveying System at Bigelow Carpet Co., Clinton, Mass. These fans receive the wool from the picker trains and blow it into storage bins.

Never Touched by Human Hands

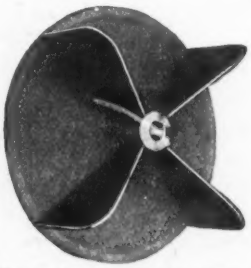
In the above system Sturtevant Fans convey the wool through the various processes from the time it is fed to the opening pickers till it reaches the cards and it is never once touched by hands. This

Sturtevant Wool Conveying System

REG. U. S. PAT. OFF.

includes a series of bins where excess raw material is stored. Special piping and switching arrangements allow the wool to be blown into any bin desired.

Sturtevant Fans



Wheel of Sturtevant Fan specially designed for conveying wool

are the world's standard for conveying, dust collecting or suction systems and for heating, ventilating or mechanical draft work.

B. F. STURTEVANT CO.

Hyde Park, Boston, Mass.

and all principal cities of the world

Manufacturers of Fuel Economizers, Mechanical Draft Apparatus, Drying Equipment, Heaters and Systems for Removing Moisture from Manufacturing Plants

Electrical Construction.
Allis-Chalmers Mfg. Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Heating Devices.
Crocker-Wheeler Co.
General Electric Co.

Electrical Supplies.
Johns-Manville Co., H. W.

Electric Driven Pumps.
Allis-Chalmers Mfg. Co.
Buffalo Steam Pump Co.
General Electric Co.

Electric Fans.
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Crocker-Wheeler Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Allis-Chalmers Mfg. Co.
Crocker-Wheeler Co.
General Electric Co.

Electric Lighting.
Allis-Chalmers Mfg. Co.
Cooper Hewitt Electric Co.
Crocker-Wheeler Co.
General Electric Co.
Johns-Manville Co., H. W.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Allis-Chalmers Mfg. Co.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrolyzer.
National Laundry Machinery Co.

Elevators.
Craig Ridgway & Son Co.
Decatur Fndry, Furnace & Mch. Co.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Salem Elevator Works.

Embossed Seals & Labels.
Mason, F. E., & Son.

Employes' Time Recorders.
Pettes & Randall Co.

Engineers (Ventilating).
Myrick, J. W. H.
Sturtevant, B. F.

Engines (Steam, Oil, Gas).
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Fairbairn, Lawson, Combe, Barbour, Ltd.
International Gas Engine Co.
International Steam Pump Co.
Snow Steam Pump Plant.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Exhaust Heads.
Power Specialty Co.
Sturtevant, B. F., Co.

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Feed Water Grease Extractors.
American Steam Gauge & Valve Mfg. Co.

Feed Water Heaters.
Blake & Knowles Steam Pump Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Buffalo Steam Pump Co.
Goulds Mfg. Co.

Feed Water Purifiers.
American Water Softener Co.
International Filter Co.
Scaife, W. B., & Sons.

Feed Water Regulators.
American Steam Gauge & Valve Mfg. Co.

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Felt Rotary Washers.
Hunt, Rodney, Machine Co.

Felting Machinery.
Hunt, Rodney, Machine Co.
Smith & Furbush Machine Co.

Fences (Iron) (Wire).
Wright Wire Co.

Fender Boards.
Case Brothers.

Fibre Boxes.
Diamond State Fibre Co.
Standard Fibre Co.

Fibre Trucks.
Diamond State Fibre Co.
Standard Fibre Co.

Filters.
American Water Softener Co.
Hungerford & Terry.
International Filter Co.
Norwood Engineering Co.
Permutit Co.
Scaife, W. B., & Sons.

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Fire Alarms.
Pettes & Randall.

Fire Brick.
Borgner, Cyrus, Co.
Johns-Manville Co., H. W.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.
Goodyear Tire & Rubber Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flexible Metal Hose.
Johns-Manville Co., H. W.

Fluted Rolls.
Firth, William, Co.
Hood, R. H., Company.
H. & B. American Machine Co.
Leigh & Butler.
Metallic Drawing Roll Co.
Riley, C. E., Company.

Flyers.
Bodden, Wm., & Son, Ltd.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Textile Machinery Co.

Foreign Agents.
Riera, Pedro Sobre.

Forges.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Friction Clutches.
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Friction Cones.
Evans Friction Cone Co.

Fuel Economizers.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Mach. Co.
Hunter, James, Mach. Co.
Kenyon, D. R., & Son.

Garnetts.
Hunter, James, Machine Co.
Leigh & Butler.
Smith & Furbush Machine Co.

Garnetted Stock.
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Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
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Gas Systems.
Kemp Mfg. Co.

Gaskets (Superheated Steam).
Johns-Manville Co., H. W.
Power Specialty Co.

Gauges.
American Steam Gauge & Valve Mfg. Co. (Pressure and Vacuum).
Lunkenheimer Co., The.

Gears.
Brown, A. & F., Co.
Diamond State Fibre Co.
New Process Gear Corporation.

Gear Cutting Machine.
Whiton, The D. E., Co.

Gearing, Silent Flexible.
Morse Chain Co.

Generating Sets.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
Borne, Scrymser Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.

Grinding and Polishing Machines.
Royersford Foundry & Machine Co.

Hand Threading Shuttles.
Shambow Shuttle Co.

Hangers.
——See Power Transmission Machinery.

Harness Twine.
Moore, C., & Co.

Harness and Frames.
Garland Mfg. Co.
Steel Heddle Mfg. Co.

Heating.
——See Ventilating Apparatus.

Heddles.
American Supply Co.
Atkinson, Haserick & Co.
Firth, William, Co.
Lavigne & Suter.
Steel Heddle Mfg. Co.

Hoists.
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Hoisting Apparatus.
Economy Engineering Co.
Hunt, Rodney, Machine Co.
N. Y. Revolving Portable Elevator Co.

Hose.
Johns-Manville Co., H. W.

Hose, Pneumatic.
Johns-Manville Co., H. W.
Parks, G. M., Co.

Hosiery Boards.
Pearson, J. T.
Paramount Metal Form Drying Co.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Co.

Humidifying Apparatus.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Humidity Controller.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
Atkinson, Haserick & Co.
Broadbent, Thomas, & Sons.
Riley, C. E., Co.
Schaum & Uhlinger, Inc.
Schwartz, L. H. A., & Co.
Tolhurst Machine Works.

Indicators.
American Steam Gauge & Valve Mfg. Co. (Steam or Gas Engines).
Wayte, W. J., Inc.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.
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Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

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Knit Goods, Edgings, Trimmings, Etc.
Chapin, George W.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

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Hunt, Rodney, Machine Co.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Spindler, E. O.
Union Special Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Acme Knitting Machine & Needle Co.
Ainslie Knitting Machine Co.

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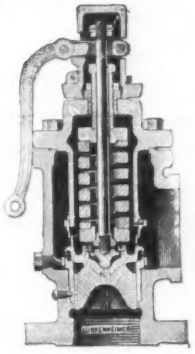
TO RELIEVE

more than the excess pressure on a boiler is wasteful and expensive.

LUNKENHEIMER POP SAFETY VALVES

will promptly relieve *the overpressure only, and no more.*

The improved construction permits of very close regulation, and the amount of "pop" and the pressure setting can be adjusted from the outside without taking the valve apart.



They will not stick, chatter or hammer; are positive in action and will give long and satisfactory service.

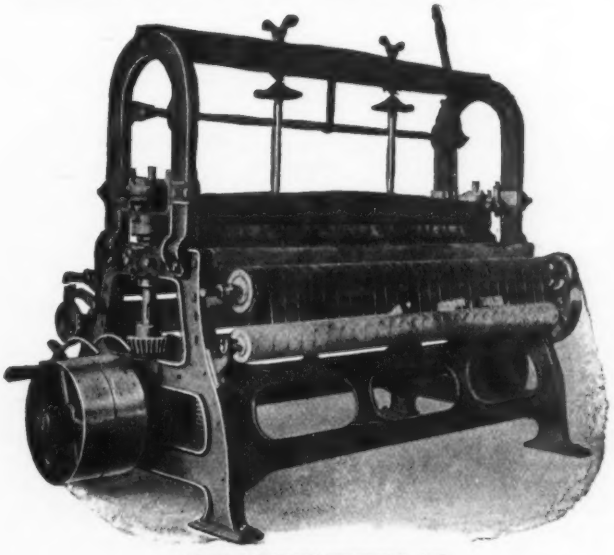
Lunkenheimer Pop Safety Valves are made in **Bronze** and **Iron Body Bronze Mounted,** with spring incased or exposed, in all standard sizes.

THE LUNKENHEIMER CO.
"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World

454f New York Chicago **Cincinnati, Ohio, U.S.A.** Boston London

CHINCHILLA MACHINE



ALSO MANUFACTURERS OF
Tentering and Drying Machines, Crabbing Machines, Cloth Washers, Whipping Machines, Etc.

For producing the following finishes:

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Petersham
Ratine
Crepe and
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Hemphill Mfg. Co.
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Lamb Knitting Machine Mfg. Co.
Leighton Machine Co.
Nye & Tredick Co.
Paxton & O'Neill.
Scott & Williams, Inc.
Spindler, E. O.
Stafford & Holt.
Standard Machine Co.
Textile Machine Works.
Tompkins Bros. Co.
Walther, Otto.
Wildman Mfg. Co.

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Domestic Machinery Works.
Grosser Knitting Machine Co.
Spindler, E. O.
Textile Machine Works.
Walther, Otto.

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Continental Latch Needle Co.
Cooper, Charles.
Crane Mfg. Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Keystone Latch Needle Co.
Lamb Knitting Machine Mfg. Co.
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Wardwell Needle Co.

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Shoemaker, J. L., & Co.

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Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

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Spindler, E. O.

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Cooper Hewitt Electric Co.
General Electric Co.
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Westinghouse Electric & Mfg. Co.

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Schieren, Chas. A Co.
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Loom Pickers.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

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Atkinson, Haserick & Co.
Buhlmann, A. W.
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Leigh & Butler.
Mason Machine Works.
Richards, Atkinson & Haserick.
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Hepworth, John W., & Co.
Leighton Machine Co.

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N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.
S. K. F. Ball Bearing Co.

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Lunkenheimer Co.

Lug Straps.
Graton & Knight Mfg. Co.

Lumpers.
Dodge, C. S. (and Willowers).
Gerry, George, & Son.
Schofield, William, Co.

Machinists' Tools.
Whiton, The D. E., Co.

Magnesia Products.
Johns-Manville Co., H. W.

Marking Pots.
Bradley, A. J.

Mattress Machinery.
Dodge, C. S.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliot & Hall.

Mechanical Draft.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Sturtevant, B. F., Co.

Mechanical Draughtsmen.
Sturtevant, B. F., Co.

Mechanical Engineers.
Buffalo Forge Co.
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Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mercerizers.
Globe Dye Works.
Home Bleach & Dye Works.

Mercerizing Machinery.
Buhlmann, A. W.
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Klauder-Weldon Dyeing Mach. Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile-Finishing Machinery Co.
Wolf, Jacques & Co.

Metallic Fire-Proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Metallic Rolls.
Metallic Drawing Roll Co.

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Mill Builders and Engineers.
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Ferguson, John W.
Main, Charles T.

Mill Piping.
Parks Co., G. M.

Mill Supplies.
American Supply Co.
Atkinson, Haserick & Co.
Bamford & Smith.
Bond, Charles, Co.
Brown's, Wm., Sons.
Buckley's, Benjamin, Sons.
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Graton & Knight Mfg. Co.
Hood, R. H., Co.
Kunze, Otto.
Lane, W. T., & Bro.
Leigh & Butler.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Pairpoint Corporation.
Philadelphia Drying Machinery Co.
Powell, Wm., Co.
Richardson Bros.
Riley, C. E., Company.
Shambow Shuttle Co.
Stephenson Mfg. Co.

Millwrights.
Brown, A. & F., Co.
Hunter, James, Machine Co.

Moth Exterminator.
Berlin Aniline Works.

Motors.
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Motor Trucks.
Kissel Motor Car Co.

Napping Machinery.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
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Leigh & Butler.
Schwartz, L. H. A., & Co.

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Noils (Silk).
Ryle, Wm., & Co.

Non-fluid Oils.
N. Y. & N. J. Lubricant Co.

Oil Cups.
Lunkenheimer Co.

Oil Engines.
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Harding & Fancourt, Inc.
N. Y. & N. J. Lubricant Co.

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Oiling Systems.
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Merrow Machine Co.
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Packing (Asbestos).
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Packings (Metallic).
Johns-Manville Co., H. W.

Packing (Rubber).
Johns-Manville Co., H. W.

Paints.
Johns-Manville Co., H. W.
Stocker, F. William, Inc. (Waterproofing).
U. S. Gutta Percha Paint Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper Cones and Tubes.
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.

Pastes (Speciality).
Pohl Machine Co.

Patent and Trade Mark Solicitors.
Crosby & Gregory.
Heard, Smith & Tennant.
Munn & Co.

Patent Attorney.
Calmore & Co.

Penstocks.
Hunt, Rodney, Machine Co.
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Perforated Metal.
Allis-Chalmers Mfg. Co.
Beckley Perforating Co.

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Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

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Pinking Machines.
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Parks, G. M., Co.
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N. Y. Revolving Portable Elevator Co.

Power Plant Ventilating System.
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Power Transmission Machinery.
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Brown Spin-Wright Cotton Co.
Cresson-Morris Co.
Evans, G. Frank.
Fairbairn, Lawson, Combe, Barbour, Ltd.
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Hunter, James, Machine Co.
Morse Chain Co. (Silent Chain).
Leffel, James, & Co.
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Leigh & Butler.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.

Preparatory Machinery (Wool and Worsted).
Smith & Furbush Mch. Co.

Presses
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Butterworth, H. W., & Sons Co.
Craw, J. W., Machinery Co.
Curtis & Marble Machine Co.
Phila. Drying Machinery Co.
Reliance Machine Works.
Saco-Lowell Shops.
Spence & Rideout.
Textile-Finishing Machinery Co.
U. S. Hoffman Co.
Woonsocket Machine & Press Co.
Worthington, Henry R.

Presses (Drill and Punch).
Royersford Foundry & Machine Co. (also Trimming Presses).

Press Boards.
Case Bros., Inc.
Diamond State Fibre Co.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Printing Machinery.
Rice, Barton & Fales Mach. & Iron Works.

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Tatham, William, Ltd.

Raw Hide Gears.
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Lavigne & Suter.

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Lavigne & Suter.

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Macungie Silk Co.

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Brown, A. & F., Co.
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Lambeth Rope Corporation.

Roving Cans.
American Vulcanized Fibre Co.
Diamond State Fibre Co.
Hill, James, Mfg. Co.
Standard Fibre Co.

Roving Reels.
Scott, H. L., & Co.

Rub Aprons.
Graton & Knight Mfg. Co.

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Allen Manufacturing Co.

Sanitary Fountains.
Johns-Manville Co., H. W.
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Sash Operators.
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Silk Mill Supplies.
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Silk Specialist, Consulting.
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Butterworth, H. W., Sons Co.
Taunton-New Bedford Copper Co.
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Singeing Machines.
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Butterworth, H. W., Sons Co.
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Payne, George W., & Co.
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Smith & Furbush Machine Co.
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Spot and Stain Removing Machine.
Sanitex Co., The.

Sprockets, Silent Chain.
Morse Chain Co.

Stacks.
Scaife, W. B., & Sons.

Steam Boilers.
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Steam Jacket Kettles.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Textile-Finishing Machinery Co.

Steam Pumps.
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Buffalo Steam Pump Co.
Deane Steam Pump Plant.
International Steam Pump Co.
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Goulds Manufacturing Co., The.

Steam Specialties.
American Steam Gauge & Valve Co.
Butterworth, H. W., Sons Co.
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Sargent's Sons, C. G., Co-p.
Sturtevant, B. F., Co.
Textile-Finishing Machinery Co.

Steam Traps.
American Steam Gauge & Valve Mfg. Co.
Sturtevant, B. F., Co.

Steam Turbines.
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Buffalo Steam Pump Co.
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Hall, Amos H., Son & Co.
Klauder-Weldon Dyeing Mach. Co.
New England Tank & Tower Co.
Textile-Finishing Machinery Co.
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Stearns, A. T., Lumber Co.
Woolford, G., Tank Mfg. Co.

Tapes, Braids and Edgings.
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Bias Narrow Fabric Co.
Friedberger-Aaron Mfg. Co.
Industrial Tape Mills Co.
Krout & Fite Mfg. Co.
Lambeth Rope Corporation.
Macungie Silk Co.
Maurer, F. W., & Sons Co.
Weimar Bros.

Tenoels.
Suter, Alfred.

Telephones (Interior Systems).
Pettes & Randall Co.

Temples.
Draper Co.

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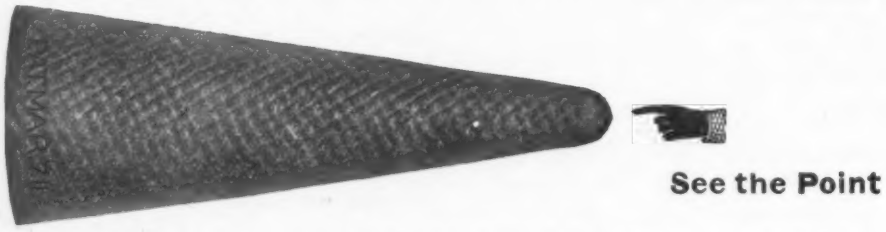

See the Point

The smooth round polished point allows the yarn to knit off without catching and breaking

All Sizes **All Colors**

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THE PAIRPOINT CORPORATION

Paper Mill and Tube Factory, NEW BEDFORD, MASS.

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SHAMBOW SHUTTLES

"Why do you do this?" asked the Treasurer. "For various reasons," said the Purchasing Agent, including the following:

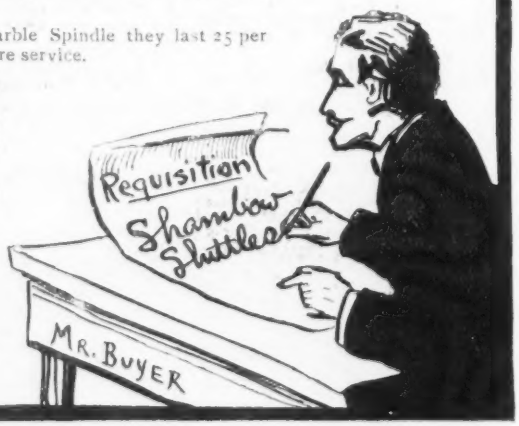
(*a*) Shambow Hand Threading Shuttles are sanitary and the weavers using them have better health with increased working capacity and less spoiled work.

(*b*) These shuttles reduce warp and filling troubles and reduce the stoppage of looms.

(*c*) On account of the Improved Marble Spindle they last 25 per cent longer and give 33⅓ per cent more service.

(*d*) Shambow Shuttles reduce our bobbin expenses because the spindles make it easy to doff the bobbin without clipping the base and there are special catches for ringed bobbins.

All these things tend to increased loom production with a low cost for shuttles. If you want these economies in your mill—just say the word and we will tell you how to get them.



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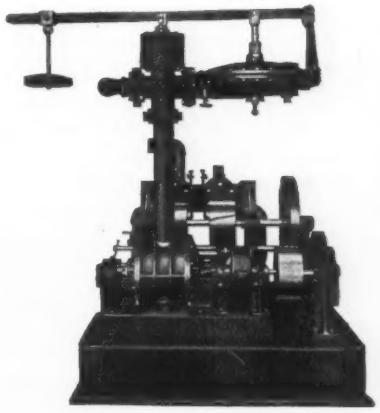

What are your answers to these questions?

Can the speed or capacity of your gasing machines be increased 25%, 50% or 75%; were you able to obtain and maintain controllable flame which adheres to burner when delivered under pressure or blast, as when turned low, producing just the temperature desired?

Are you obtaining at all times such mixture of air and gas as to produce a self-sustaining flame, leaving free the oxygen of the surrounding atmosphere to consume the charred nap?

Are your burners suitable to handle such mixture under pressure?

Are you consuming no more gas than is necessary to singe or calender work passing through your machines, or are you at the mercy of the operator who does the mixing at the several burners and has no two alike?

Are your calenders always heated to the desired temperature?

Do you know what is being done today with CITY GAS, when applied by the KEMP AUTOMATIC GAS SYSTEM?

May we send a representative to your mill or plant to take up these questions in their order and explain our service?

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Publishers' Page

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The "Build Now" propaganda has shown that by taking advantage of present conditions those who contemplate building can save a considerable percentage of what would be the cost of carrying out their plans if delayed until conditions had returned to a normal state.

Consequently the movement has resulted in a great deal of good, many individuals and corporations starting on their plans earlier than they would have done otherwise and thus relieving the strain on business as well as on workingmen.

It is probably true that some manufacturers of mill equipment could also make and sell their products at less cost than will be possible six months or a year from now when the boom for American industries is here in force.

It has been stated by machinery men that a Cotton Mill can be built today at a saving of $4.00 per spindle in cost over four years ago. Improvements and replacements can be made now at great advantage to yourself and to the machinery people.

If this be so why not take a leaf from the book of those who have so ably forwarded the "Build Now" movement and tell the facts to your prospective customers, inducing them to place their orders now instead of waiting until it is absolutely necessary that the orders be given.

By doing so you can help yourself, the buyer and labor—as well as assist in creating more stable business conditions.

Advertise now and build good will for the future as well as create new business.

Advertise now and establish confidence in your organization as an asset upon which you can realize in the future.

Good will is an exceedingly important factor in selling any product and the longer a concern is advertising, other things being equal, the more valuable will be its good will—and this "good will" is recognized as an asset by bankers.

You can build for the future by advertising in the present—and keeping at it.

Change of Address

Subscribers are requested to notify us in writing before the 5th of the month of any change of address desired, as that is the date on which our mailing lists close for the current month. If we do not receive notice of the change until after the 5th, that month's issue will go to the old address and may require postage for reforwarding.

It sometimes happens that because a news item has been published to the effect that he has moved from one mill to another, a subscriber thinks that his address will be changed automatically without any instructions from him and he will sometimes write to the effect that we knew he had moved because we had published an item about it and he does not see why his magazine was not sent to his new address. He forgets that the subscription department is entirely separate from the news department and has 6,000 names to look after and can hardly be expected to search the news columns for possible changes of address, and even if it did, it would not be proper to make changes unless ordered or authorized by the subscriber.

Please, therefore, be considerate, for your own sake as well as ours, and advise us promptly and definitely when changing your address. It helps us very much if your old address is given, as well as your new address stated clearly.

Advertising Must be Continuous

There is a necessity for continued advertising. You can't tell the people and tell them once. You must continue to do so. Barnum knew the game. To make a business go and stay going advertising must be continuous. And I am glad to say that advertising now is more honest and straighter than it has ever been since the game began. —Lafayette Young.

Monthly Circulation Statement

Of this edition over 6,200 copies are printed and all are needed.

The Textile World Record is a Member of the Audit Bureau of Circulations.

FACTS AND GOSSIP.

.....

Massachusetts, Lynn. Earl F. Stanton, of Providence, is negotiating with the Lynn Chamber of Commerce regarding the opening of a braid mill here. It is planned to organize a corporation with capital stock of $95,000, and it is understood Mr. Stanton is ready to invest $25,000, the balance to be secured from Lynn investors. It is planned to manufacture all kinds of braids from shoe laces to wide millinary braids. An option has been secured on a suitable manufacturing space and the project is awaiting the action of the Chamber of Commerce.

Massachusetts, Millbury. No. 1 Mill of the Millbury Mills is being operated night and day with two shifts of employes. No. 2 Mill is running overtime until nine o'clock evenings and there are prospects that this department will also be put on a night and day schedule with two shifts of help.

Massachusetts, New Bedford. Idle machinery in the Bennett Mill and the Rotch Mill of the New England Cotton Yarn Company, and in the Wamsutta Mills, was started up during the week.

Massachusetts, Norton. The Talbot Wool Combing Company is running its plant day and night. A commission wool combing, scouring and carbonizing business is carried on.

Massachusetts, Rockland. More orders are being received by the Rockland Webbing Company and several more looms have been put in operation in the new plant of the company at the corner of Park and Howard Sts.

Massachusetts, South Acton. The South Acton Woolen Company has been organized with capital stock of $75,000 by William Rawitser, president and assistant treasurer; Fred Rawitser, treasurer and clerk, and Frank C. Smith, Jr. It is understood the new corporation succeeds the South Acton Woolen Company, of Fred and William Rawitser, which manufacture shoddy and wool extracts.

Massachusetts, Southbridge. The Central Mills Company are running 180 looms overtime until 9 o'clock every night, making a sheeting that is used as a lining fabric for overshoes and rubbers. John E. Paige, treasurer of the company, is quoted as stating that an inquiry has been received for a sheeting to be used for the turbans for the Indian troops now fighting in Europe.

*Massachusetts, Springfield. J. C. Anthony has been elected president of the new Carrigan & Hill Company, and H. C. Hill, treasurer and buyer. The new company has taken over the plant at Talcott and Fisk Aves., formerly operated by the L. M. Wilcox-Calder Company, and conducts a business of waste cleaning, sorting and grading. The business was recently incorporated with capital stock of $40,000.

Massachusetts, Webster. The Chase Woolen Mills of the American Woolen Company are running to full capacity and are busier than since 1907.

Massachusetts, Worcester. The annual meeting of the Southern New England Textile Club will be held at the Bancroft Hotel, the afternoon of April 17.

Michigan, Detroit. The Textile Mills, Inc., is the name of a new concern which has been organized with capital stock of $10,000 to manufacture textiles. The incorporators are Jason L. Thompson, J. E. C. Altrock, Charles E. Terns and William C. Gassman.

Michigan, Muskegon. The Amazon Products Company has been incorporated with capital stock of $25,000 to manufacture and deal in textiles.

*Montana, Great Falls. The plant established at Conrad by the Northern Flax Fibre Company is producing flax fiber and from now on will handle a larger quantity of material. George Pearson, the manager, is interesting the farmers about Conrad in a machine for pulling the flax plant instead of the ordinary reaper.

New Jersey, Changewater. In order to fill a rush order for export the Hopatcong Worsted Mills are running day and night.

New Jersey, Hoboken. The Hoboken Ribbon Company has advised Mayor Martin Cooke of Hoboken that unless something definite is done regarding sewers in the upper section of Hoboken within the next two or three months the plant may be moved to some other location. The Hoboken Ribbon Company has a branch at Richmond, Va., and it is said the concern is considering moving the Hoboken plant to Richmond or combining both plants on Long Island or in New York City. There is a possibility that the plants will be consolidated at Hoboken providing the sewer problem is settled satisfactorily within a few months.

New Jersey, Paterson. Some of the machinery in the local plant of the Mason Silk Mills is being moved to the branch at Dushore, Pa.

New Jersey, Paterson. The Silk City Dye Works have been granted a charter with capital stock of $100,000. The incorporators are Michael Lynch, Edward D. Cundell and Joseph P. Carroll, of Paterson.

New Jersey, Paterson. Anton Schmid, receiver for the Haledon Throwing Co., advises that all the plants of the Haledon Company will be closed in about two weeks.

New Jersey, Paterson. The Stave Silk Company have so many orders ahead they have been compelled to run a night shift of employes. Broad silks are manufactured.

New Jersey, Paterson. The broad silk plant of Ballou & Miller will be sold at public auction by Abe Cohen, auctioneer.

New Jersey, Union Hill. The Union Hill Silk Finishing Company, reported incorporated in September with capital stock of $25,000, is affiliated with the Clifton Textile Company, which is connected with the Pennsylvania Textile Company of York, Pa. It is reported the Pennsylvania Textile Company has prepared plans for building a new dye house.

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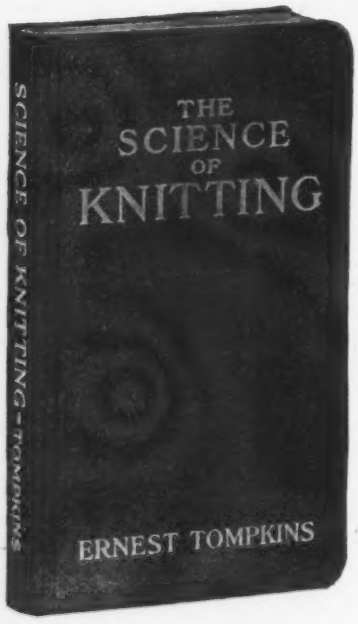

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BY
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330 Pages, Illustrated *Price $3.00 Postpaid*

Some of the contents are—

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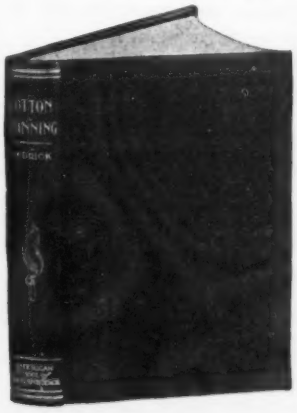
Cotton Spinning

By
CHARLES C. HEDRICK



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S. Slater & Sons, Inc., Webster, Mass., Weaving Mill, Spinning Mill and Boiler Plant.
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Warrenton Woolen Co., Torrington, Conn., Complete Plant.
Wood Worsted Mills, Lawrence, Mass., Dye House.
Yale & Towne Mfg. Co., Stamford, Conn., Brass Foundry.

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PATENTS

If you have an invention which you wish to patent you can write fully and freely to Munn & Co. for advice in regard to the best way of obtaining protection. Please send sketches or a model of your invention and a description of the device, explaining its operation.

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Assistant Manager or Supt. Cotton Mill; has worked on fine and coarse, white and colored goods; 44 years of age; twenty years' cotton mill experience; good reference.
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Boss Weaver in Cotton Mill; has worked on coarse and fine yarns, sheetings, shirtings, colored, velvet and corduroy goods, fine lawns, ginghams, sateens, drills, chambrays, flannels, duck and fancy goods; familiar with Crompton & Knowles looms, drop boxes, dobby and Whitin looms; is an expert on Draper looms; 38 years of age; married; will not go to Pa., West, or South; good reference.
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Overseer of Dry Finishing; has worked on cassimeres, coverts, broad cloths, worsteds, venetians, dress goods, kerseys, men's wear and chinchillas; familiar with all kinds of finishing machinery; 38 years of age; married; will not go to N. H., Vt., or to Canada; good reference.
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Assistant Supt. and Cotton Classer; would consider position as overseer or second hand of carding or weaving; has worked on plain, fancy and novelty goods; familiar with Whitin, Howard & Bullough, Dobson & Barlow, Crompton & Knowles machines; will not go West, South or to Canada; 22 years of age; good reference.
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Designer, Designer and Assistant Supt., Designer and Supt., or Designer and Overseer of Weaving; has worked on worsted and woolen dress goods, cloakings, worsted and woolen men's suitings, overcoatings, piece dyes, mixtures, plaid backs, chinchillas, kerseys, cotton and wool warps, bed and horse blankets; familiar with Knowles, Crompton, Furbush and plain looms; various cards and mules; fullers, rotary and all machinery pertaining to wet and dry finishing; 50 years of age; married; will not go to Canada.
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Overseer of Cutting; has worked on all kinds of knit goods; 36 years of age; married; good reference.
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Superintendent of Knitting Mill; would consider position as boss knitter; has worked on hosiery, underwear, rubber linings, elderdowns, astrachans, chinchillas, fleeces, buffalo robes, plush, sweaters, and all kinds of plain and fancy knit goods; familiar with Crane, Tompkins, Charles Cooper and Robert Gormley knitting machines; also circular latch and spring needle and automatic strippers; 49 years of age; married; good reference.
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Overseer of Weaving; has worked on fancy and piece dyed worsteds, serges, cassimeres and flannels; familiar with Crompton & Knowles looms; 43 years of age; married; will go to Mass., R. I., and Conn.; good references.
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Overseer of Dyeing; has worked on raw wool, raw cotton, rags, wool waste, woolen and worsted piece dyes; worsted, woolen and resist yarns; familiar with Klauder & Weldon yarn and stock machines; will not go to Canada; 46 years of age; married; good reference.
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Receiving Clerk, Traffic Manager, Shipping or Order Clerk; has worked on hosiery, rubber, underwear and silk spun yarns; familar with Lowell Machine Co.'s controllers and Atwood Machine Co.'s reels; 34 years of age; will not go to Canada; good reference.
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Superintendent of worsted yarn mill; has worked on all kinds of worsted yarns for weaving and knitting; familiar with all makes of worsted machinery; 47 years of age, married; will not go West, South or to Canada; good reference.
6357, Textile World Record, Boston, Mass.

Boss Weaver; has worked on cottons, woolens, worsteds, both men's wear and dress goods; plain and fancy; asbestos, textiles and packings; familiar with Knowles, Crompton & Thayer or Schaum & Uhlinger looms; 32 years of age, married; will not go to Canada; good reference.
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Overseer of Carding and combing in cotton mill; has worked on carded and combed Sea Island and Egyptian cotton from 40s to 150s ring and mule spun; American reelers from 20s up for both hosiery and sewing thread and crocheting trade; familiar with Saco, Lowell, Howard & Bullough, Whitin, Hetherington, Platt, Dobson & Barlow, Woonsocket, Potter & Johnson machines; 32 years of age, married; good reference.
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or woolen mill, either jacquard or dobby work; would accept position in a wholesale woolen house; familiar with cotton and woolen calculations, also analytical work; 25 years of age; Philadelphia Textile School graduate; experience considered before salary; good reference.
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6362, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; has worked on all kinds of mixes and waste, both cotton and woolen, also silk; familiar with Davis & Furber, Johnson & Bassett and James Smith machines; 38 years of age; married; good reference.
6363, Textile World Record, Boston, Mass.

Overseer of Spinning in worsted yarn mill; has worked on worsteds and jute; familiar with all worsted machinery of Bradford system and all jute machinery; 32 years of age, married; good reference.
6364, Textile World Record, Boston, Mass.

Master Mechanic or mechanical engineer; would like position where he would have the supervision of the mechanical construction, power transmission, ventilation and heating work; could design any special machinery required, improvements and attachments to present machinery; 30 years of age, married; will not go to Canada; good reference.
6365, Textile World Record, Boston, Mass.

Mule Fixer in woolen mill; has worked on shoddy and cotton mixes; all wool and cotton waste from 1/2 to 7 run; familiar with Davis & Furber, Johnson & Bassett jacks and mules; 37 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6369, Textile World Record, Boston, Mass.

Superintendent in cotton mill; has worked in both cloth and yarn mills on all kinds of cotton, all lengths of staple and all numbers both carded and combed; familiar with both American and English makes of machinery; 41 years of age, married; will not go South; good reference.
6370, Textile World Record, Boston, Mass.

Overseer of Dyeing; has worked on cottons and worsteds, all worsteds, unions, cross dyes, worsted yarns, long and short skein cotton, raw stock, cotton yarns, piece dyes and resist yarns; familiar with all kinds of warp and worsted dyeing machinery; 45 years of age, married; will not go West or South; good reference.
6371, Textile World Record, Boston, Mass.

Overseer of Knitting; has worked on ladies' and men's underwear from latch and spring needles; sweaters from power machines and jerseys, bathing suits, Swiss and Richelieu ribbed goods; familiar with Scott & Williams and other latch needle machines; Tompkins and other spring needle machines; 38 years of age, married; will not go West or South; good reference.
6372, Textile World Record, Boston, Mass.

Boss Carder in woolen mill; has worked on wool and shoddy; familiar with any make of cards; 46 years of age; good reference.
6373, Textile World Record, Boston, Mass.

Superintendent, manager, purchasing agent, secretary or treasurer of knitting mill; has worked on ladies' ribbed underwear, sweaters, hosiery, cotton yarn, ring and mule, 84-176 needle hosiery; familiar with McMichael & Wildman, Scott & Williams, Standard, Banner, Geo. D. Mayo, Schneider & Fisher machines; 34 years of age; has had years of experience in purchasing; good reference.
6374, Textile World Record, Boston, Mass.

Master Mechanic; would accept any good mechanical or electrical position; has worked on cotton and velvet machinery; engines; pumps; electrical equipment; power machinery; general repairs in different repair shops; 30 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
6375, Textile World Record, Boston, Mass.

Assistant Superintendent or assistant designer in woolen mill; has worked on both woolen and worsted fabrics of all kinds; familiar with English system worsted spinning machinery including carding, scouring, drawing and combing; Davis & Furber cards and mules; Crompton, Knowles, Draper, Stafford, Knowles roller and Crompton roller looms; 22 years of age; good reference.
6379, Textile World Record, Boston, Mass.

Overseer of Worsted Drawing or spinning; has worked on merinos, crossbreds and long luster wools, alpaca, mohair and mixtures, anywhere up to 60s spinning counts, also knitting yarns; familiar with all makes of drawing, spinning and twisting machinery; 23 years of age, married; good reference.
6380, Textile World Record, Boston, Mass.

Master Mechanic or would consider first class position as engineer; has worked on cotton, woolen and print yard machinery; also understands D. C. and A. C. motors and generators; has a first class Massachusetts engineer's license; 30 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6377, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all kinds of goods, both woolens and worsteds, also women's wear; familiar with all kinds of machinery; 50 years of age, married; will not go to N. J. or Canada; good reference.
6381, Textile World Record, Boston, Mass.

Assistant Superintendent or overseer; has worked on all classes of wool and mohair, white and colored; familiar with open and cone drawing; ring, flyer and cap spinning; twisting and a good knowledge of all combing; 31 years of age, married; good reference.
6382, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on satinets and woolens of all kinds; familiar with Davis & Furber, Cleveland, Furbush, Lombard and condensers; 50 years of age, married; good reference.
6383, Textile World Record, Boston, Mass.

Chemist or assistant superintendent of cotton piece goods finishing plant; has worked mostly on cotton piece goods; 50 years of age, married; good reference.
6384, Textile World Record, Boston, Mass.

Boss Finisher in woolen mill; has worked on all classes of woolens, worsteds and cotton worsteds; familiar with most all makes of machinery; will not go West, South or to Canada; good reference.
6385, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; has worked on woolens, worsteds and cotton mixed goods; 34 years of age, married; will not go to N. Y., N. J., West, South or Canada; good reference.
6386, Textile World Record, Boston, Mass.

Boss Weaver in cotton mill; has worked on plain, fancy and silk goods; duck cloth, leno work, in fact all makes of goods; familiar with Crompton & Knowles, Whitin, Colvin, Draper and jacquard looms; has a technical as well as practical knowledge; 35 years of age, married; will not go to Pa., West, South or Canada; good reference.
6387, Textile World Record, Boston, Mass.

Boss Carder in woolen mill; has worked on all kinds of goods from the cheapest to the best; familiar with Lombard, Cleveland, Davis & Furber, Furbush and English cards; 37 years of age, married; will not go to N. H.; good reference.
6388, Textile World Record, Boston, Mass.

Superintendent cotton cloth or yarn mill; superintendent worsted yarn spinning or overseer of cotton spinning; has worked on fine and coarse cotton yarns; coarse and fine stocks in worsted yarns; familiar with Whitin, Hetherington, Saco & Lowell cotton machinery; Lowell, Prince & Smith worsted machinery; 47 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
6389, Textile World Record, Boston, Mass.

Boss Weaver in cotton mill; has worked on cotton blankets; familiar with Crompton & Knowles blanket looms; 38 years of age, married; will not go to Pa., N. J., or South; good reference.
6390, Textile World Record, Boston, Mass.

Agent of Cotton Mill or superintendent; has worked on plain sateens, twills, pillow tubings, lenos, Bedford cords, etc.; familiar with English and American makes of machinery; 49 years of age, married; good reference.
5984, Textile World Record, Boston, Mass.

Overseer of Dressing, spooling, winding, reeling and twisting in woolen mill; has worked on plain and fancy woolens and worsteds; familiar with all kinds of machinery; 33 years of age, married; will not go South; good reference.
6262, Textile World Record, Boston, Mass.

Superintendent of woolen mill, or superintendent and designer; has worked on fancy and piece dyed worsted suitings; familiar with worsted, carding, combing, weaving and finishing machinery; 50 years of age; married; will not go West, South or to Canada; prefers Philadelphia; good reference.
6261, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving; has worked on all kinds of cotton goods; familiar with Draper, Lowell, Whitin, Crompton and Mason looms; 48 years of age, married; will not go West, South or to Canada; good reference.
6260, Textile World Record, Boston, Mass.

Designer or assistant designer in woolen mill; has worked on woolens, worsteds, cottons and silks; familiar with all kinds of looms; 25 years of age; good reference.
6259, Textile World Record, Boston, Mass.

Overseer of Dressing in woolen mill; has worked on shoddy, wool, both fine and coarse, cotton, cotton worsteds and all grades of straight worsteds, both wet and dry; familiar with Davis & Furber and Cleveland Pipe machines; skeleton frames of all kinds and also cylinder machines; 38 years of age, married; will not go to Vt., West, South or Canada; good reference.
6271, Textile World Record, Boston, Mass.

Overseer of Dyeing in cotton mill; would take second hand position; has worked on every class of cotton goods, sateens, burlap, bunting, cotton flannels, denims, ratine, artificial silk, alpaca, mohair and unions; familiar with dyeing, bleaching and finishing machinery; 23 years of age; good reference.
6341, Textile World Record, Boston, Mass.

Superintendent or designer in woolen mill; has worked on fancy woolens, worsteds, piece dyes, uniform cloths, billiard cloths, flannels, kerseys, cloakings, overcoatings, etc.; 36 years of age, married; will not go South or to Canada; good reference.
6343, Textile World Record, Boston, Mass.

Boss Spinner in woolen mill; has worked on woolen goods, knitting goods, underwear, sweater yarn; union, wool and shoddy yarn, also merino yarn; familiar with Davis & Furber and Johnson & Bassett machines; 27 years of age; will not go South; good reference.
6344, Textile World Record, Boston, Mass.

Superintendent or superintendent and designer in woolen or worsted mill; has had 10 years of experience as overseer and designer; 6 years in a large mill on fancy worsteds and piece dyes, in men's wear and dress goods; good on calculations, organization and system; 40 years of age, married; good references; will not go West or South; will consider anything with definite outlook.
6345, Textile World Record, Boston, Mass.

Second Hand of Dyeing in woolen mill; has worked on fancy stock dyeing and pieces and indigo stock dyeing and pieces; familiar with machines making knickerbocker stock; Hunt's indigo dyeing machines with hydrosulphite vat; 22 years of age; will not go West, South or to Canada; good reference.
6347, Textile World Record, Boston, Mass.

Overseer of Spinning in woolen mill; has worked on carpet yarns, woolen yarn for men's wear and cloakings, all wool and merino yarn for sweater coats and all cotton; familiar with Davis & Furber, Johnson & Bassett, Bancroft and Smith mules; 39 years of age, married; will not go West, South or to Canada; good reference.
6328, Textile World Record, Boston, Mass.

Master Mechanic; has worked on electric engines and all woolen machinery; 29 years of age, married; good references.
6216, Textile World Record, Boston, Mass.

Overseer of cotton yarn dyeing, bleaching and mercerizing; would consider position as specialty man in large mill doing dyeing; has worked on cotton skeins (common yarn and mercerized) mostly but can handle warps and raw stock also; 27 years of age; will not go to Pa., N. J., West or South; good reference.
6217, Textile World Record, Boston, Mass.

Overseer of ring spinning, spooling and warping in cotton mill; has worked on everything in the cotton line; familiar with New England makes of machinery; 32 years of age; married; will not go to Pa.; good reference.
6218, Textile World Record, Boston, Mass.

Superintendent or assistant superintendent in knitting mill; has worked on very high class full fashioned goods of wools, worsteds and silks, also a great deal of experience on cut goods; familiar with mostly all makes of flat knitting machines, also power and circular machines; 26 years of age, married; good reference.
6219, Textile World Record, Boston, Mass.

Superintendent or would consider position as overseer of spinning in cotton mill; has worked on fine and coarse counts, also hosiery yarns; familiar with all makes of machinery; 41 years of age; good reference.
6220, Textile World Record, Boston, Mass.

Overseer of Dressing, twisting, etc., in woolen mill or would consider position as superintendent or assistant superintendent; has worked on worsteds, woolens and cotton worsteds; familiar with Crompton and Knowles looms; dressing machinery; winders, spoolers, twisters and finishing machinery, both wet and dry; will not go to Canada; 26 years of age; good reference.
6232, Textile World Record, Boston, Mass.

Overseer or assistant superintendent in yarn mill; superintendent of yarn department in large mill, or would consider position as general overseer; has worked on denims, coverts, sheetings, shirtings, velvets, etc.; yarns from 10s to 120s, Peeler, Egyptian, Sea Island carded and combed, single and plys for knitting, weaving, colored and mercerizing; familiar with Fales & Jenks, Universal, Foster, Eastern & Burnham, Carpenter, Howard & Bullough, Saco & Pettee, Collins, Lowell, Whitin, Draper, Broadbent, and other machines; will not go to Me., Pa., N. J., West, South or to Canada; 34 years of age, married.
6233, Textile World Record, Boston, Mass.

Overseer or second hand of weaving in cotton mill; has worked on most all kinds of goods, both cam work and dobby, also blanket weaving, box work and jacquards; familiar with the Crompton & Knowles, Draper, Lowell, narrow, Gilbert plush, Crompton new magazine looms and others; 45 years of age, married; good reference.
6234, Textile World Record, Boston, Mass.

Overseer of Carding or carding and spinning in woolen mill; has worked on all grades of woolen, cotton and shoddy mixed goods; familiar with D. & F. and Lombard cards; Smith, J. & B., D. & F., and Bancroft mules; 40 years of age, married; will not go South; good reference.
6235, Textile World Record, Boston, Mass.

Overseer of Weaving in cotton mill; would consider good position as second hand; has worked on silks, ducks, poplins, sateens, Russian cord lenos, and all kinds of general weaves; familiar with Draper,[a] Whitin, Stafford, Crompton & Knowles looms; prefers Draper looms; will not go South; 39 years of age, married; good reference.
6236, Textile World Record, Boston, Mass.

Superintendent of cotton cloth mill or absorbent cotton; would consider large position as overseer of weaving; has worked on plain, fancy cotton and silk mixes, flannels, blankets, bath robes, denims, tickings, stripes, absorbent cottons, gauze bandages, etc.; familiar with carding, picking, spinning, bleaching, drying and bandaging machines, also all classes of weaving machinery; 48 years of age, married; will not go to Pa., West, South or Canada; good reference.
6237, Textile World Record, Boston, Mass.

Cutting Dies

— FOR —

"Straight Line" Cloth Analysis

And Determining Average Yarn Number of Fabrics

The "straight line" method of cloth analysis has been used by us for years. It is equally well adapted for cotton, woolen, worsted or linen fabrics.

The value of this method is conclusively demonstrated by the fact that the U. S. Treasury Department has recommended it to Customs Collectors and Appraisers as the simplest method of determining the average yarn number on which the tariff on cotton cloth is based.

The sample having an area of 1/300th square yard (4.32 square inches) can be cut in any form desired. The rectangular die shown in the illustration is what we have found convenient.

For the convenience of the trade we have arranged to supply dies like this at **$5.00** each, express paid. This includes instructions for use.

Having cut a sample of cloth with this die and weighed it on an ordinary grain scale, calculations to obtain the following information can be quickly made for cotton, woolen, worsted or linen:

Average number of yarn: woolen runs or cut; worsted, cotton or linen number.
Number of each kind of yarn.
Grains per square yard.
Ounces per running yard.
Ounces per square yard.
Running yards per pound.
Square yards per pound.
Number of yarn when spun.

This method of calculation is invaluable for analyzing fabrics that are to be duplicated or imitated.

The United States appraisers and custom house officers will use a system based on similar data, and these calculations will be in constant use by importers who wish the know what the duty will be on cotton cloths imported, and by domestic cotton manufacturers who wish to ascertain what the duty will be on competing foreign goods similar to goods of their own manufacture. We do not supply the grain scales, but these may be bought of any supply house.

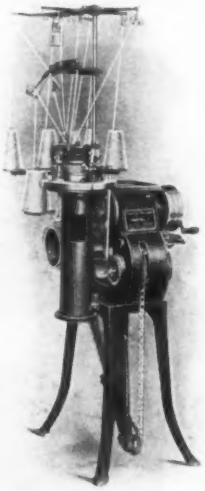
Textile World Record, 144 Congress St., Boston, Mass.

—OR—

Alfred Suter, 200 Fifth Avenue, New York

Our Hosiery Machines

automatically set up and drop off each stocking and make the anti-ravelling course, and, in addition to the cost of transferring the cuffs of half hose and the sewing of the welts of women's hose, these machines effect very pronounced savings, for instance—in the case of half hose, the ordinary ribbed machine is eliminated entirely, and, of course, the first cost of this machine, its maintenance and floor space, together with the knitting waste, the cost of cutting the ribbed top and the ravelling waste, which in the ordinary practice is unescapable, are entirely saved. Transfer menders are altogether eliminated and the expense and annoyance of training expert help is avoided. In respect of the women's hose there is no expense for severing the stockings, no sewing machine operation and consequently no waste on account thereof and a marked decrease in loopers ravelling waste, due to the fact that the stockings are pressed off to a course and not left with a crooked unevenly cut edge.



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SCOTT & WILLIAMS, INC.

NEW YORK **88 PEARL STREET, BOSTON** UTICA

KNIT.

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Enlargements and Improvements.

Canada, Ontario, Carleton Place. A number of weeks ago an idle mill was taken over by C. W. Bates of Bates & Innes, Ltd., and started up on blankets. Hosiery knitting machinery is now being installed in the mill to manufacture wool hosiery and Richard Thompson, formerly of Penmans Limited, is interested with C. W. Bates in the operation of the mill.

Canada, Ontario, Hawkesville. The small woolen yarn mill of S. S. & O. S. Sugden has been taken over by the Elora (Ont.) Textile Company, manufacturers of astrachans and novelty knit goods and will be operated as a spinning plant. Extensive alterations and repairs are being made and improvements are being made in the equipment. David F. Stewart, superintendent of the Elora plant is supervising the changes.

Georgia, Columbus. In addition to building a new central steam power plant for the Perkins Hosiery Mills and Massey Hosiery Mills, which were recently merged with the Perkins plant, the Perkins Hosiery Mills will add 8 cards and other machinery. The new power plant will be equipped with new boilers, a new chimney will be constructed, and facilities provided for using exhaust steam for heating, dyeing, finishing and box making.

Illinois, Chicago. A 4-story and basement mill, 50 by 109 feet, is to be built at 2341 Wabansia Ave. for the Burkland Knitting Works, manufacturers of infants' and children's underwear. Construction contract has been awarded to the Wieboldt Construction Company of Chicago, and it is expected that the new mill will be completed about May 1. The present plant at 2649 Sheffield Ave. is to be discontinued when the new plant is ready. The new quarters will provide the opportunity for largely increasing the equipment and for adding a new bleaching department.

New Hampshire, Franklin. The Sulloway Mills have fitted up a box making department for the manufacture of boxes in which the company's hosiery is packed.

New York, Herkimer. A new 150 h. p. boiler has been installed in the Union Mills, and the plant has resumed operations on a day and night schedule.

New York, New York City. Additions have been made to the plant of the Northern Knitting Mills, 648 Broadway, and the manufacture of novelties in Angora finished goods have been taken up, including sweaters, juvenile sets and fancy knit goods.

New York, New York City. The Knitwear Mfg. Co., Inc., recently organized as noted with capital stock of $6,000, succeeds Glickman & Miller Co., manufacturers of knitted silk neckties and other goods at 106 Grand St. New quarters have been secured at 65-67 West Houston St. and 6 new knitting machines and other equipment are being added, which will give a total of 20 knitting machines and 6 sewing machines, on which they will manufacture silk and wool sweaters, bathing suits, and other knit goods for men, women and children. Nathan Klein has been elected president; Harry Glickman, treasurer, and Louis Strauss, superintendent and buyer.

Pennsylvania, Hamburg. Kessler & Mosser are now operating the Standard Knitting Mill, succeeding Kessler & Son. They have also enlarged their line as well as equipment which now consists of 11 knitters and 16 sewing machines on which they are making men's, women's and boys' cotton underwear and union suits which they are selling through New York. They also state that new and larger quarters will be secured at an early date to enable them to make further improvements in the plant.

Pennsylvania, Meadville. The Meadville Knitting Mills, a new company recently organized as noted, has taken over the Conn Woolen Mills, which manufactured woolen knitting yarns, and 22 knitting machines have been set up and more are arriving from time to time. R. E. Brownell heads the new company. It has been reported that the Brownell Shoe Company recently secured an order for 1,500,000 pairs of wool socks for export.

Pennsylvania, Pottsville. The Reber Mfg. Company is putting another story on the frame annex adjoining its main plant and has removed the equipment of the branch mill in the business section to its building at 14th and Market Sts. They are quite busy on men's and women's seamless hosiery, 176 to 200-needle goods, which they sell direct.

Pennsylvania, Pottsville. The Keystone Knitting Mills, operating on women's ribbed underwear, are arranging for the installation of 8 knitters and 8 sewing machines for the purpose of enlarging their output which they sell through New York.

Pennsylvania, Reading. H. D. Leinbach has increased the equipment of his Wyomissing Knitting Mill to 47 knitters, 30 footers and 8 loopers, all of which are running full on children's cotton ribbed hosiery.

Pennsylvania, Reading. The Model Underwear Co., located at West Lawn, have increased their equipment to 20 knitters. They report that they are arranging to work their plant double shift with plenty of orders on hand for their line of women's vests and union suits, which they sell through New York.

Pennsylvania, Reading. The B. H. Spatz Hosiery Mill, 639 Gordon St., is very busy on silk, lisle, mercerized, and art silk seamless hosiery. They have increased their equipment to 24 knitters, 5 ribbers and 4 loopers, all of which are running full. The product is sold in the grey.

Pennsylvania, Royersford. The Progressive Knitting Mills, who are manufacturing a line of ladies' misses' and children's ribbed vests and union suits of cotton and mercerized yarns, are working their plant until late at night in an effort to turn out their orders and as a consequence are increasing their equipment to 60 knitters and 50 sewing machines, the production being sold direct and through N. Y.

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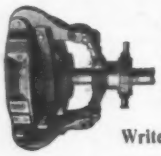
For a Friction Clutch



Some sizes as low as one dollar per horsepower. This clutch will carry 25 to 50% overload. Built any size 5 to 100 H. P.

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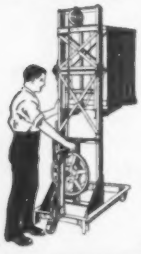

enable one man to lift heavy boxes, bales, barrels and rolls, clear to ceiling's height. Built to operate by hand, electric or pneumatic power. Portable, safe and simple.

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Textile Machinery

Makers of Rag, Wool, Hair and Finishing Pickers, Automatic Square and Cone Willows, "Schofield" Intermediate Feed for Cards, Rag and Extract Dusters, Waste Pullers, Worsted and Shoddy Reels, All Kinds of Spike and Slat Aprons.

Special Machinery Built. General Machinery Repairs.
Relagging Picker Cylinders a Specialty.

This Brush
is the best Mill and Loom Duster at the price on the market

No. 46

Write for Prices and Free Sample

M. Cocker & Co., Phila., Pa.

A NEW SILK YARN HOUSE

The Cascami Silk Spinning Company of America announce their offices will be located at 331 Fourth Ave. Joseph O'Donoghue, formerly a salesman with A. P. Villa & Bros., and well known in the silk trade, has been elected a vice-president and together with A. Sever, the treasurer, will act as the sole representative in this country of the main company in Milan, the Societa per la Filature dei Cascami di Seta, leading manufacturers of spun or schappe silk.

FACTS AND GOSSIP.

New York, Hornell. According to a report the machinery in the Hornell branch of Julius Kayser & Co., is to be moved to the new branch plant being established at Sherbrooke, Que., and building will be allowed to stand idle for the time being.

New York, Jamestown. The Jamestown Worsted Mills have passed into the control of William Broadhead & Sons, owners of the Broadhead Worsted Mills. Negotiations which have been in progress for the sale of the controlling interest in the common stock has been consummated and S. B. and A. N. Broadhead took over the stockholdings of Arthur K. Briggs, Alfred E. Hall and Elliott C. Hall. At a meeting of directors of the corporation the resignations of Alfred E. Hall, E. Snell Hall, Arthur K. Briggs, Wilson C. Price and Frank W. Stevens as directors were presented and accepted. These vacancies were then filled by the election of Shelden B. Broadhead, Almet N. Broadhead, William R. Reynolds, William A. Broadhead and Henry K. Smith. The following officers have been elected: Sheldon B. Broadhead, president; Almet N. Broadhead, treasurer, and William R. Reynolds, secretary. The Broadhead Mill has 15 combs, 22,000 spindles, and 500 broad looms. The Jamestown Worsted Mills have 14 combs, 20,000 spindles and 400 looms.

New York, New York City. J. P. Morgan & Company have appointed Edward R. Stettinius, president of the Diamond Match Company, to take charge of the department recently created in connection with the appointment of the banking house as commercial agents for the British Government.

New York, New York City. Robert R. Salembier and Ward Clay have formed a new silk manufacturing company and will take over a mill. Mr. Salembier was formerly connected with the silk department of A. D. Julliard Company. Mr. Clay has been dress goods and silk buyer for the Burnham, Munger & Root Dry Goods Company.

New York, New York City. The M. & S. Silk Mills have removed from 31 W. 21st Street to 15 W. 26th Street.

New York, New York City. The Independent Silk Dyeing Company has been incorporated with capital stock of $50,000 by Rudolph A. Weber, St. James, N. Y.; Frederick C. Wettlaufer, Passaic, N. J., and John J. Robinson, Huntington, N. Y.

FACTS AND GOSSIP.

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New York, Watertown. The Toohey Silk Mills, Inc., are running to full capacity. Plans for enlarging the plant, which were considered last fall, have not been dropped but it is unlikely that increases will be made for several months. The Shaugnessy Knitting Company, which recently resumed full time operations after a period of curtailment, are working some departments nights.

*New York, Watertown. The Woolen Products Company, Inc., recently established by men connected with J. Stabinsky & Sons, proprietors of the Watertown Paper Stock Co., is considering bidding on a large order for woolen blankets for export.

North Carolina, Bladenboro. The Bladenboro Cotton Mills, Inc., manufacturers of 8s to 14s hosiery yarns, are running night and day.

*North Carolina, Charlotte. The Charlotte Cotton Fiber Company estimates the loss in the recent fire at $35,000, fully covered by insurance. The batting mill adjoining the mill building will be in operation again in a short time. It is understood the burned plant will be rebuilt.

North Carolina, Charlotte. The Fidelity Mfg. Company has begun night operations and have received orders which will keep the plant running 24 hours a day for some time. It is reported that an order for 300,000 yards of damask has been received.

North Carolina, Concord. Following the recent report that the Cannon Mfg. Company had increased its authorized capital stock from $1,000,000 to $5,000,000 it is rumored that J. W. Cannon has contracted for new equipment comprising 65,000 spindles and that a part of this machinery will be installed at Kannapolis and the balance in the Wiscassett Mills at Albermarle, and other mills in which the Cannons are interested.

*North Carolina, Gastonia. J. H. Separk, treasurer and buyer of the Gray Mfg. Company, heads a project to build a new 5,000-spindle yarn mill. Mr. Separk has no information to give out regarding the project until it is further developed. Reports that Mr. Separk and J. L. Gray, the latter superintendent of the Gray Mfg. Company, would resign to devote their attentions to the new enterprise, are incorrect. None of the Gray or Separk interests in the Gray Mfg. Company have ever been offered for sale and so far as can be foreseen at present their interests will not be for sale in the future.

North Carolina, Gastonia. C. M. Dunn is understood to have sold his interest and resigned his connection with the Dunn, Clara and Armstrong Mills of this city. It is understood that Mr. Dunn is organizing a new company to build and operate a 6,000 spindle mill on fine yarns.

North Carolina, Lexington. There are rumors of a new company being organized to establish a 30,000-spindle mill in Lexington. Nothing definite has been learned regarding the project.

Morse Silent Chain
99% Efficiency
Efficiency, reliability, economy—no matter which point seems most important to you, Morse Silent Chains excel, and should be your choice for Twisters, Winders, Warpers and all other Textile Machines.
LET US TELL YOU WHY
Morse Chain Co., Ithaca, N.Y.
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IF You Need
GOLD SEALS
You Need the Best
Our Embossed Gold Seals and Labels are the Best for the money.
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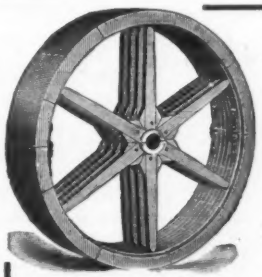
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THE AMERICAN CRAYON CO.
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FACTS AND GOSSIP.

.....

Ohio, Ashtabula. At a meeting of stockholders of the Ashtabula Worsted Company plans for starting up the mill were brought up and discussed. It is the opinion of the stockholders that the mill will be in operation again in the near future. Thomas J. Rennick continues at the head of the concern.

Ohio, Cleveland. According to local reports, knit goods to the value of $2,400,000 have been contracted for in Cleveland for Servia, France and England. N. J. Rich & Con.pany, and the United Knit Goods Company, both are reported to have large orders.

Oklahoma, Oklahoma City. A bill has been introduced into the Oklahoma State Legislature providing for exemption from taxation for a period of ten years all cotton and woolen mills. A similar action was recently taken in Texas.

Oregon, Eugene. Harry Stevenson is seeking to interest the factory committee of the Commercial Club in a proposition to locate a large lace factory in Eugene. Mr. Stevenson, who has been connected with the American Lace Mfg. Co., at Elyria, Ohio, and the Zion (Ill.) Lace Industries, has a plan for equipping an eight-machine plant and estimates the cost of the factory building and power plant at $25,000, machinery at $68,000, and working capital at about $55,000. He plans to form a company to be capitalized at $150,000. A special committee has been appointed to go into the matter more fully and possibly to estimate on a smaller plant. Mr. Stevenson is now living at Salem, Ore.

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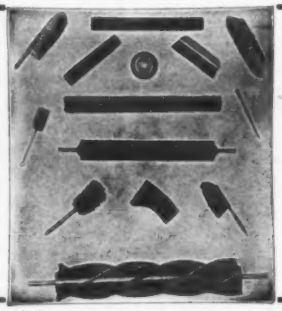

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Made from one piece, up to 6" long and 3" dia.
We are located in the best white birch region. Our work and prices seem to satisfy the most particular customers. We can give any finish desired. Estimates furnished on samples submitted
E. L. Tebbets Spool Company, Locke's Mills, Maine

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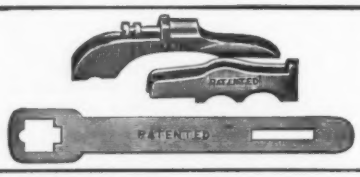
1,200,000 pairs now in use
Best Saddle for Top Rolls of Spinning Frames
Send for Samples
DIXON LUBRICATING SADDLE CO., Bristol, R. I.
Manufacturers of all kinds of Saddles, Stirrups and Levers



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Made of paper and wood,
Needs no covers,
Will not split
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Not liable to break.

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CHAFFEE BROTHERS COMPANY,
OXFORD, MASS.
BOX SHOOKS and CLOTH BOARDS.

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SPECIALTY PASTES FOR
ARTIFICIAL SILK, SILK THREAD FINISHING MACHINES, CREY SILK WARPS. ALL SILK PASTES CONTAIN BEESWAX
PASTES FOR COTTON (ROSIN PASTE). SAMPLES CHEERFULLY SENT OR WE WILL MATCH YOUR SAMPLE. SPECIAL PASTE PREPARED ON REQUEST.

FACTS AND GOSSIP.

.....

Pennsylvania, Allentown. A concern known as the Penn Finishing Company has taken the third floor of the building at 615 Court Street and is installing machinery for finishing astrachan and other knitted cloths. The new plant will be run in connection with the Rexall Knitting Company. The men interested are Henry J. Hemler, George Martin, and J. M. Beck.

Pennsylvania, Allentown. C. G. & C. A. Smith, who were reported as starting a six-loom ribbon plant at 615 Court St., have begun operations at 315 Court St., not at 615 Court St

*Pennsylvania, Columbia. No new machinery will be installed in the addition being built by Schwarzenbach-Huber Company at the Columbia plant. The new space will be used for office purposes. About a year ago the Schwarzenbach-Huber Company took over the local silk plant, which was formerly operated by the Ashley & Bailey Company.

Pennsylvania, Kittanning. A promoter is negotiating with local interests regarding the organization of a company to establish a new woolen mill here.

Pennsylvania, Lansdale. The Newark Hair Felt Company, with a capital of $40,000, C. J. Cole, president; W. F. Allen, vice-president, and M. J. Murphy, secretary, treasurer and buyer, are operating a plant with 2 sets cards and 2 pickers on felts for the electric and upholstery trades, selling the production direct.

Motors and Textiles

should be uppermost in your mind. ¶We cannot tell you anything about Textiles, but we can tell you things you should know about our motors. ¶We have an interesting booklet on Power Transmission in the Textile Mill, which is yours for the asking.

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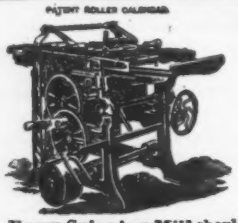

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Patent
Automatic
Roll Calender

Every Spinning Mill should possess this machine for periodically calendering leather covered rolls.
RESULTS: Better Spinning! Fewer Broken Ends! Economy in Roll Covering!
Supplied by any of the leading
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TEXTILE MACHINERY
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Established 1796

Special shaped carbon, black diamond, **pointed tools** for turning paper, rag, corn husk and cotton **calender rolls**, hard rubber, fibre, etc. Manufactured by
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Card Stamping and Repeating
FOR ALL TEXTILE FABRICS
Also Repeating for Throw Overs for Fine and French Index
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For Perfect and Economical Results in Speck Dyeing Worsted Piece Goods, use
CRYSTAL SPECK DYE
Covers all vegetable and other specks.
Does not stain white silk threads in goods.
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Carpet Manufacture.
By FRED BRADBURY.
The only complete work on the subject.
A handsome volume, bound in dark green cloth, gold lettering; over 300 pages; 256 illustrations and 3 colored plates.
Price $3.00, Carriage Prepaid
A reliable book on carpet and rug manufacture that will strongly appeal to the manufacturer and designer. It is written in an easy style, combining text and illustrations in a manner that gives the perfect technical book.
The chapters are: Designing, Color, Brussels Carpets, Wilton Carpets, Tapestry Carpets, Axminister Carpets, Chenille Axminister Carpets, Kidderminster and Scotch or Ingrain Carpets.
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R. H. Hood Company
Established 1885
1842 Germantown Ave., **PHILADELPHIA, PA.**

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oil, grease and other mill stains quickly and permanently removed by the Sanitex Process. Machines installed in Textile and Knitting Mills, or Spotting done for the trade at reasonable rates.
The Sanitex Co., 33 Union Sq., N. Y., Dept. A.

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FOR PRINT WORKS GINGHAM AND COTTON MILLS, BLEACHERIES, ETC., ETC.
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ELLIOTT & HALL, 54½ Hermon St., Worcester, Mass.

The Chicago Portable Watchman's Clock
Approved by the National Board of Fire Underwriters and accepted by all Insurance Companies
The Perfection of Watchman's Detector Service
Simple, Efficient, Tamper-proof, Durable
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Cleans Wool, Floors, Anything
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Automatic **"Load and Look"** *Springless*
A Time, Labor and Money Saver
Write for Catalog showing various types
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Kaumagraph Transfer Stamps
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MISCELLANEOUS.

.....

Canada, Ontario, Bracebridge. The Canadian-Niagara Linens, Ltd., reported incorporated several months ago with authorized capital stock of $300,000, has acquired the mills in Bracebridge formerly owned and operated by the Dominion Linen Mfg. Co., prior to their removal to Guelph, and the buildings are being equipped to receive machinery which will shortly be installed. This will include 1,000 spindles and 132 looms, electric power, etc., for making linen damasks, towels, toweling and specialties. Alexander Fergusson Macintyre, formerly with the Montreal Cottons, Ltd., Valleyfield, Que., and the Niagara Falls Linen Company, Niagara Falls, N. Y., is president and general manager. The town of Bracebridge has guaranteed $20,000 of the company's bonds. When the Canadian-Niagara Linens, Ltd., was organized it was planned to establish at once a mill at Niagara Falls, Ont. This project is not being proceeded with until the Bracebridge plant is in full operation, which should be some time in the present year. Manufacturing will be started at Bracebridge within three months. Practically all the machinery has been arranged for and will be shipped by the end of March. The office is at 24 Empire Bldg., Niagara Falls, Ont.

*Connecticut, Middletown. It is reported the Middletown Lace Mfg. Company, reported incorporated a week ago with authorized capital stock of $270,000, will occupy the plant of the Poidebard Silk Mfg. Company on Cooley Ave., formerly known as the Brown Silk Mill. As soon as the machinery is removed the new company will take possession. The incorporators are Charles E. Healy, Frank H. Twyeffort, and George Feinberg, all of New York City.

*Georgia, Rome. It has been noted that J. F. Allison and R. L. Crutchfield are interested in organizing a $25,000 company to establish a bleachery at Rome, to handle cotton linters used in the manufacture of absorbent cotton and explosives. Messrs. Allison and Crutchfield will organize under the name of the Southern Bleachery Co., Inc., with capital stock of $25,000. Mr. Allison will be president and buyer, and Mr. Crutchfield will be treasurer. A building is in course of construction and will be equipped with steam and electric power and necessary apparatus for cleaning and bleaching the cotton fiber. This is said to be the first plant of the kind in the South.

Illinois, Chicago. The Western Shade Cloth Company has purchased property at Jefferson and 21st Sts., opposite its present plant and will tear down the wooden structure which now occupies the land to make room for a modern factory building.

Massachusetts, Sharon. A new business is being established here under the name of the American Core-Twine Company and manufacturing will be started about April 1. The new company has capital stock of $100,000. Lyon Weyburn, 53 State St., Boston, is president; and W. K. Flint, is treasurer and buyer.

Massachusetts, Westboro. Construction work has been started on a storehouse to be built for the Westboro Weaving Company, in the rear of the present plant.

*Michigan, Port Huron. Within a few days, construction work will be started on the new building for the Summers Linen Company's flax fiber plant which was destroyed by fire several months ago. It is expected the new mill will be completed and equipped before the end of April and will give employment to about 40 hands. This is in addition to the linen rug plant of the Summers Linen Company and is for the production of flax fiber only. B. S. Summers is agent and buyer, and James Walton is superintendent.

*New Jersey, Paterson. The name of the concern which has taken over the plant of the Kaufman Silk Dyeing Company is the Superior Dye Works, not the Surprise Silk Dyeing Company as stated in earlier reports. The new concern has begun operation, doing skein silk dyeing. F. M. Sindle is the buyer.

New York, New York City. A new concern known as the Star Quilting Company is equipping a plant at the corner of Grand and Sullivan Sts. with 1 set of cards, making batting.

*New York, Pleasant Valley. Operations will be started at the Pleasant Valley Mill of James Thompson & Company by April 1. The local plant will be operated under the name of the Yazoo Mills as a branch of the Valley Falls plant. As noted in previous reports, the old cotton mill of Garner & Company has been taken over and is being overhauled and made ready to receive the equipment of the New York City plant of the Yazoo Mills.

Pennsylvania, Hazleton. New buildings are to be erected for the Hazleton Bleach Works, and additional machinery for bleaching underwear, cotton yarns and hosiery, will be installed. The plant is quite busy at present. They expect to be located in their new quarters by August.

South Carolina, Charleston. Construction of the new $125,000 plant for the General Asbestos & Rubber Company is under way and the entire plant may be ready for operation by July 1. A 2-story mill, 300 by 100 feet, is being built and is to be equipped with machinery for making asbestos yarns and cloth. Lockwood, Greene & Co., Boston and Atlanta, prepared the plans and the construction work is being done by the Fiske-Carter Construction Company, of Worcester, Mass., and Greenville, S. C. The new mill will replace the present yarn and cloth mill and all the machinery will be moved into the new building and additional new machinery installed. The new mill is located at North Charleston, an industrial suburb being developed by the North Charleston Corporation. The Atlantic Coast Line has expended $50,000 in extending its lines down through the property to the waterfront, and the Carolina, Atlantic & Western Road has expended $75,000 in running its main line through the property.

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Doubtless you have often seen our advertisement in the pages of this journal. You may often have thought you would try

Wyandotte Textile Soda

AND

Wyandotte Concentrated Ash

But you have from time to time put off sending the order. Are hesitation and delay good business principles? Don't you realize that large quantities of these materials are being used, and that those mill men who do use them have a source of profit which you might have, but which you do not have?

You are a little late in accepting the opportunities offered by these products. Days that are gone never return, so why hesitate longer? An order to your supply house for a quantity of these articles or a letter to us for further information will result in much more than you ever thought possible. Will you let us prove it? Order from your supply house.

Trade Mark Indian

In Every Package

The J. B. Ford Co., Sole Mnfrs., Wyandotte, Mich., U. S. A.

This soda has been awarded the highest prize wherever exhibited

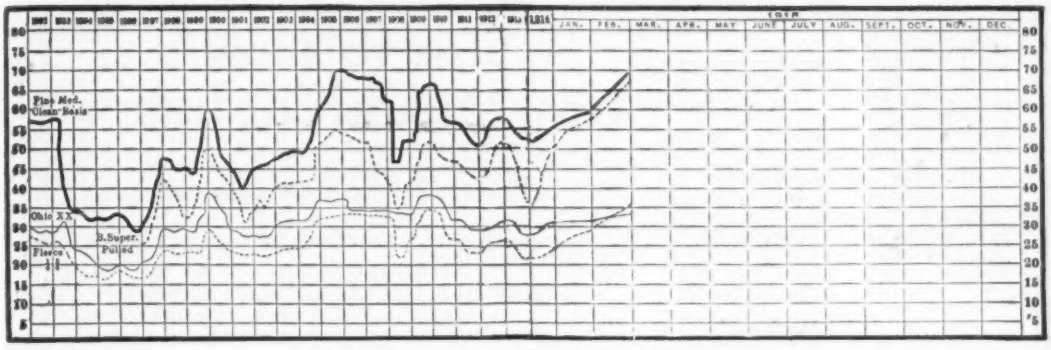

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

The world outside of the British Empire and her Allies is within a measurable distance of a wool famine. As extracts from our German exchanges, which will be found in another part of this issue, clearly indicate Germany, and presumably her ally, Austria, is in the most serious condition so far as the wool supply is concerned. The situation in the United States is unquestionably serious owing to the very small quantity of wool grown in this country to supply our mills. Since our last report manufacturers and dealers have been scrambling for wool. The result has been that prices have risen steadily and at this writing show a distinct tendency toward further advances. Relief is expected from the measures taken to raise the British embargo on wool shipped to this country, but unfortunately these plans have been temporarily blocked by the complications that have arisen between the Textile Appliance and large users of wool. Growers in the West are holding off for high prices and some contracting for wool on the sheep's back has been done, although not to as great an extent as in previous years. There is an improvement in the goods market owing to the manufacturing clothiers having become convinced that a real shortage of wool and wool goods is probable in the near future. This increase in the consumption of wool, owing to the starting of idle machinery, has served to strengthen a market which has never before been equalled so far as strength is concerned.

WOOLEN.

Enlargements and Improvements.

Massachusetts, Wales. Eugene E. Redden, of Springfield, who formerly operated the Scantic Mill at Hampden, Mass., has purchased the Avon Woolen Mills. It is understood Mr. Redden will make repairs on the property at once and put the mill in operation. The Shaw Mill is being operated by Joseph H. Loudon.

Massachusetts, Warren. It is announced that the Sayles & Jenks Mfg. Company is soon to start 20 additional looms at its plant in the lower village. The plant is now running overtime and is operating in addition to its own plant, the Bradford Yarn Mills.

TETRAZO COLORS
FOR COTTON

We offer these products in all shades for the dyeing of cotton in any form.
Among them will be found colors specially adapted to meet the various requirements of fastness to light, washing, cross dyeing and fulling.
Shade cards and samples, with full information, cheerfully furnished on application.

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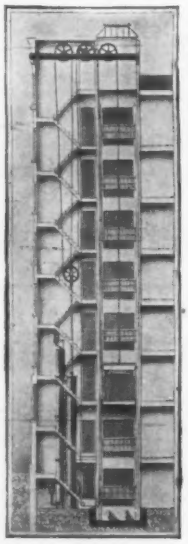
Double Geared



Steam Hydraulic Elevator in a Great Soap Factory in Jersey City

JUST TO SHOW

How the Old Cat Jumps

The Somersville Mfg. Co., Somersville, Conn. have a nice little plant up along the Connecticut River next to Massachusetts. They make "Woolens".

They equipped the "old mill" with the Ridgway Steam Hydraulic Elevator.

They were delighted.

Then they equipped "No. 2 Mill" with the Ridgway Steam Hydraulic Elevator.

Now they have come back today, with the order for "No. 3 Mill."

If you are smart you will not buy any elevator equipment until you ask this Company what it means to "Hook 'er to the Biler."

Down at Providence, R. I. is the great Mohair plant of Jos. Benn & Sons, Ltd.

This is an English concern brought here by the Republican tariff (that used to be.)

They equipped the new factory with electrical elevators—and had the usual trouble.

No Englishman will stand the annoyance of Electrical Elevators—he hasn't that kind of patience.

So we were sent for to change the electrics to Steam Hydraulic Elevators.

They built a new factory and equipped it with Ridgway Steam Hydraulic Elevators.

Then they got Ridgway Elevators for their Bradford, England plant.

Now today we are shipping more for the Bradford, England, plant.

The wise mill owner before buying elevator equipment will ask Jos. Benn & Sons just why they

"HOOK 'ER TO THE BILER"

CRAIG RIDGWAY & SON CO., Coatesville, Pa.

Elevator Makers to Folks Who Know

BLEACHERS!

Your selling agent may ask you any time for a bleach fit to compete with the Peroxide white.

He is up against it with the Lime bleach you turn out.

He can't guarantee the strength of the goods, nor the permanency of the white. Neither are his goods as soft and elastic.

In that case—or rather before—ask us to teach you Peroxide bleaching (Free to Mills.)

THE ROESSLER & HASSLACHER CHEMICAL CO.

NEW YORK

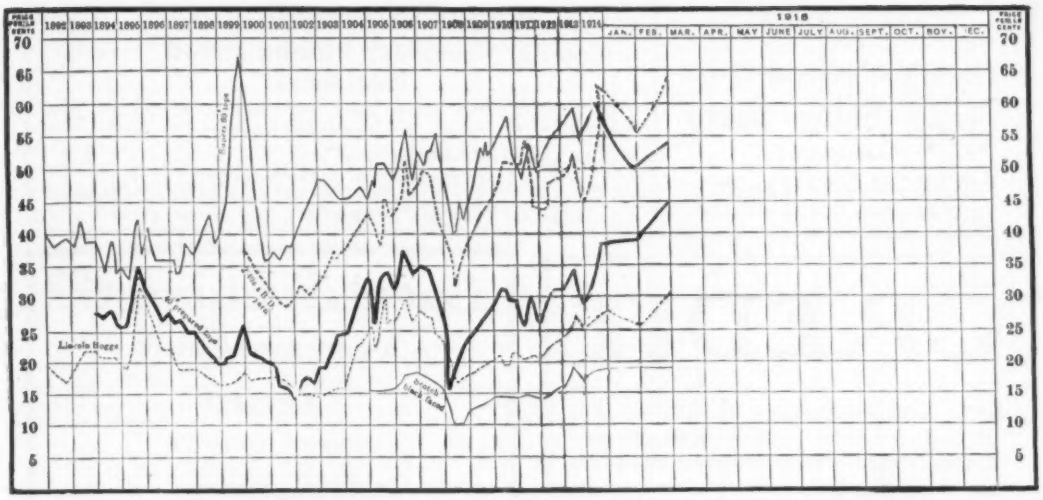


CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

THE BRADFORD MARKET

By Our Regular Correspondent

Bradford, Eng., Feb. 27, 1915.

The height of prices in this market has three obvious sources of assistance: (1) the insatiable demand; (2) pressure to keep to fixed dates for the delivery of goods; (3) congestion at the ports and on the railroads so that the local cupboard is kept uncommonly bare. The continued firmness can be no greater surprise to outsiders than it is to insiders, many of whom are continually at the end of their resources of stock and in imminent danger of having to stop their machines for want of material enough to last out the day. The pressure of shortage is greater than at any time in memory and is greatest of course in crossbreds. The conditions are favorable to moneymaking for those who own raw material and so strong is the local demand that for the time being official vacillations about the embargoes on export have no perceptible effect upon prices.

A prolonged abstention from buying would tend, of course, to moderate the price situation, but topmakers have sold forward and in the absence of demand would be some time in making its influence felt. The trend is towards still higher prices for forward delivery. There is reason to regard the domestic trade in fabrics as about normal in amount and the manifest falling off in exports is much more than covered by the exceptional demands on account of the troops. There are more signs of quickening than of slackening, very little machinery is unemployed. Some of the standing machines are not stopped for want of orders, but for want of overdue materials.

WOOLEN MILL NEWS

.....

Enlargements and Improvements.

*Canada, Ontario, Lindsay. The Horn Bros. Woolen Company, Ltd., have decided to rebuild the burned plant, but no date has been set for beginning the operation. They will have four new sets of cards and 39 new looms, and this equipment with dyeing and finishing machinery, complementary equipment and practically all supplies, is to be arranged for in the next few months.

Canada, Ontario, Merrickville. For the past four months construction work has been under way on a new dam and power house for Watchorn & Co., Ltd., manufacturers of tweeds, flannels, blankets and wool knitting yarns. They say they expect to develop 1500 h. p. and will change over the mill to electric drive. About two months more will be required for the completion of the new power development, but the mill is being started up with steam power until the new hydro-electric plant is completed.

*Canada, Ontario, Peterboro. New equipment to be added by the Bonner-Worth Co., Ltd., includes 650 new spindles for worsted yarn manufacture on the Bradford system. This new machinery will be installed during April. 2/8s to 2/30s worsted yarns are manufactured and dyed. F. Bonner is president and E. Worth is treasurer, agent and buyer.

Canada, Ontario, Toronto. The Toronto Carpet Mfg. Company, Ltd., which we reported several months ago would install looms for weaving blankets, has added 35 92-inch fancy looms for weaving blankets, tweeds, khaki and worsted cloth. The later report that they would install knitting machines for manufacturing sweaters was premature and it has been decided not to add a knitting department for the present. By the addition to the weaving department they now operate 180 looms.

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Textile Machinery and Tools
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Best references at your disposal

American Accounts Desired for
Spinning, Weaving, Finishing and Dyeing Machinery
for cotton, wool, worsted, flax, hemp, jute, silk and other fibres
Cotton and Wool Knitting Machinery
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CREDIT

Every merchant is aware of the fact that there are constant improvements in mechanical devices to simplify the manufacture of merchandise.

The successful merchants instantly install the machine or attachment that increases the efficiency of labor, or safeguards the welfare of employees.

Surely the successful Textile Manufacturer has the same interest at heart in securing the most efficient credit system.

The National Credit Office has introduced new features in the credit reporting field that increase the efficiency of the sales force and decrease the loss by bad debt.

As this service is automatic, and unlimited in its scope, every manufacturer can afford to use it.

Do not renew your contract for credit reporting for 1915 until you have a demonstration of the National Service.

Write to-day for full particulars of this new, automatic, Credit System.

National Credit Office
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Sold Exclusively Through
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Textile Engineer
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Minerva
A WATERPROOFER FOR CEMENT-CONCRETE
F. WILLIAM STOCKER, INC. HOBOKEN, N. J.

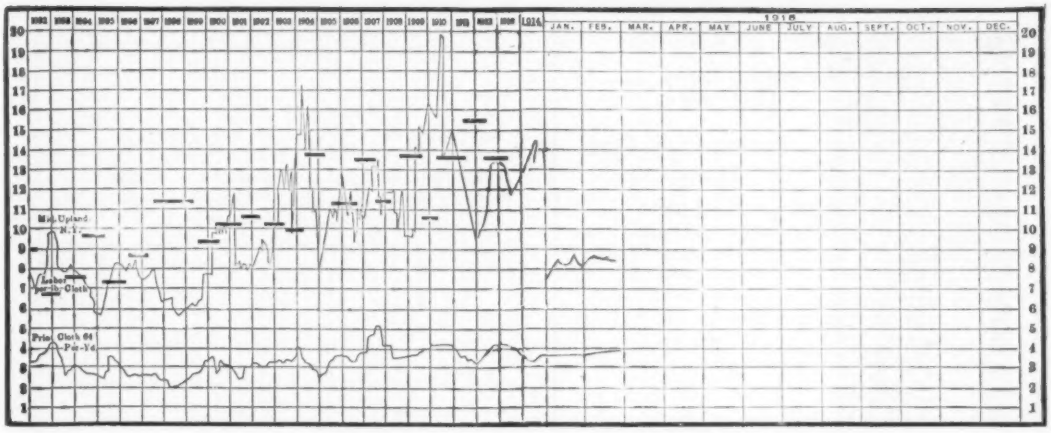

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

After touching 8.70 cents for middling uplands at New York cotton declined sharply, the principle factor in the movement being the German order for a submarine attack on British commerce and the certainty that England would retaliate by a blockade of the German forts. The sinking of two American vessels loaded with cotton for Germany also had a very depressing effect, as it is certain that the stopping of exports of cotton to Germany would materially increase the quantity of cotton to be carried over to the next season. With the market depending so completely on the fortunes of war it is idle to speculate on the course of prices. The trade is forced to watch developments from day to day, with practically no guide for forming a judgment as to what a day may bring forth.

The movement into sight from Aug. 1 to Feb. 26 is reported by the "Chronicle" as 11,447,270 bales, as compared with 12,474,738 bales in the corresponding period of 1913-14. The same authority estimates the world's visible supply of cotton on Feb. 26 at 7,548,297 bales, as compared with 6,187,490 bales on the same date in 1914, 5,589,305 bales in 1913, and 6,033,781 bales in 1912.

COTTON.

New Mills.

Georgia, La Grange. Construction work will be started on buildings for the new Hillside Cotton Mills about April 1 and it is expected that manufacturing will be started about Jan. 1, 1916. At first the production will be confined to 8s to 24s cotton yarns and the equipment will consist of 20,000 spindles and preparatory machinery. Steam power will be used and there will be equipment for dyeing raw stock. The organization of this company has been noted in previous reports. S. Y. Austin is general manager and buyer.

.....

Enlargements and Improvements.

Virginia, Lynchburg. Additions and improvements are being made to the equipment of the Lynchburg Cotton Mill Company, including the installation of a new heating system in the weave room, the addition of a new slasher and improvements in the mill tenement houses.

.....

Mills Starting Up.

New Hampshire, Peterboro. The cotton mill at West Peterboro, formerly operated by the Union Mfg. Company, will shortly be started up, according to report, by Joseph White, Sr., and Joseph White, Jr., who announce that they have purchased the property, and will soon begin the installation of new equipment. It is understood that manufacturing will begin in about three months. The mill was formerly operated on crochet quilts under the control of Parker, Wilder & Company.

North Carolina, Durham. Control of the Commonwealth Cotton Mfg. Co., whose plant is idle, has been secured by Brodie L. Duke, and manufacturing is to be resumed. The plant contains about 10,000 spindles on which 10s to 20s hosiery yarns were manufactured.

WEIMAR BROS. MANUFACTURERS OF Cotton Mercerized Tapes

SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES

Phone Connections. Works, 2046-48 Amber Street, PHILADELPHIA, PA.

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"No-Waste"
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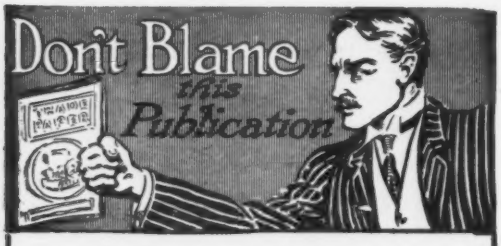

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Enlargements and Improvements.

Connecticut, Danielson. It is understood the new equipment to be installed in the Quinebaug Company's mills will increase the capacity about 30 per cent. The capital stock was recently increased from $500,000 to $750,000, the money received from the sale of the new shares to be devoted to purchasing new equipment and making improvements.

*Connecticut, Killingly. New looms recently ordered by the Killingly Mfg. Company are being received. They will be set up and put in operation as fast as possible, the capacity of the plant being increased about thirty per cent. as noted in previous reports. Tire fabrics are manufactured.

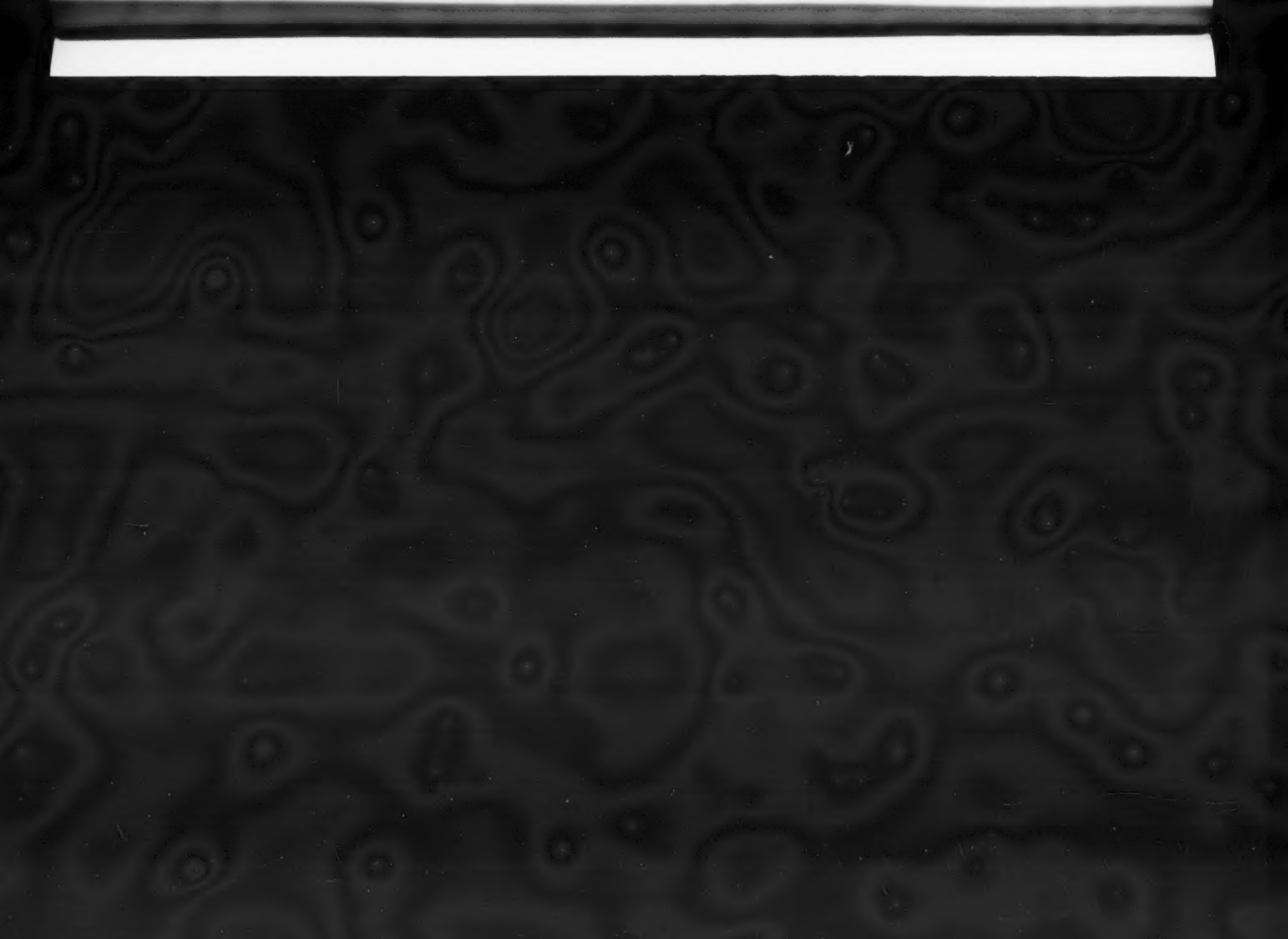
Georgia, Columbus. Plans are being made for enlarging the Muscogee Mfg. Company's plant and contract will shortly be let for a new concrete bleaching department. Several months ago the company purchased all the property on the west side of Broad St., between 14th and 15th Sts. A number of improvements have been made in the plant and equipment.

Georgia, Macon. About $60,000 will be expended within the next few months by the Bibb Mfg. Company in improvements on the mills in East Macon. The contract for remodeling the old No. 1 Mill and constructing an addition, 132 by 80 feet, has been let to the Galivan Bldg. Company, Greenville, S. C. New machinery will be installed to make Mill No. 1 one of the most extensive and modern plants operated by the company. As noted previously, work has been started on an addition, 100 feet long, to the weave room of the plant at Columbus, Ga. A large order said to be for 1,000,000 pairs of socks for export was recently received by the knitting department of the Bibb Mfg. Company and the knitting mill is working on a night and day schedule.

Georgia, Rome. There will be 1,224 spindles and 20 looms in an addition to the Anchor Duck Mills. Construction contract was let during the week and orders have been placed for new waste yarn equipment and for 20 looms. The enlargement will be 200 by 100 feet, with an ell 40 by 50 feet, from plans drawn by Lockwood, Greene & Co. Probably the enlargement will be equipped ready for manufacturing about May.

*Georgia, Thomaston. The Thomaston Cotton Mills will build a new mill, 400 by 125 feet, with capacity of 25,000 spindles and 600 looms, and have engaged J. H. Mayes, of Charlotte, N. C., as architect-engineer. On the completion of the building 15,000 spindles with preparatory machinery will be installed and the contracts for this equipment have been placed.

*Maryland, Savage. The enlargement at the Savage Mfg. Company's plant and the new hydro-electric plant on which work was started several months ago, has been completed, and the plant is running to full capacity. Individual motors have been installed on some of the machinery and are being given a trial in the picker department and on heavy looms. Cotton duck and dryer felts are manufactured. George V. Ward is superintendent and buyer.



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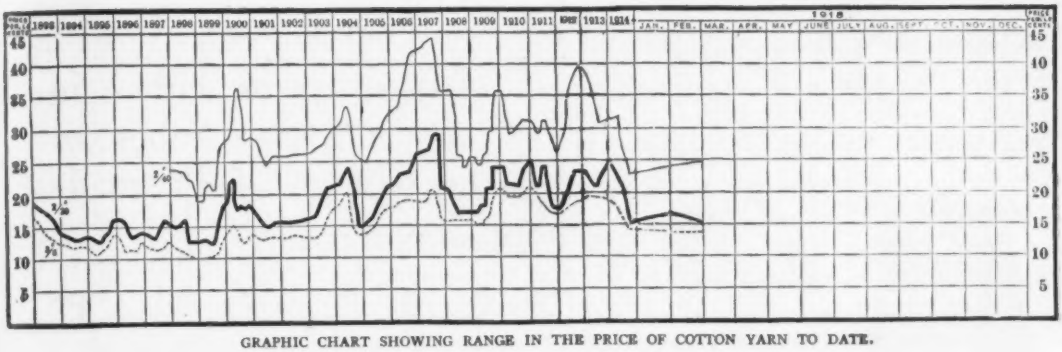

GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

There is a much better tone to the cotton yarn market today than for some time back. While the demand is still greatly below normal, manufacturers in many lines are showing more interest even though yarn prices are higher. Many manufacturers are still running less than one-half their machinery and are not inclined to feel optimistic. There is still a feeling of uncertainty which does not encourage buyers to purchase for future delivery to any large extent. This applies especially to damasks, upholstery goods and hair cloth, which are especially dull. The men's wear lines that are now moving have brought in some business, but not up to expectations. There is more demand from the dress goods trade. General business conditions, however, are encouraging. Yarn prices today are based on lower priced cotton. While spinners continue to hold for good prices it will take but a very slight increase in the demand to cause further advances.

Eastern Cops.

6s	14¾
8s	15¼
10s	15¾
14s	15¾
16s	16¾
18s	17¼
20s	17¾
22s	18¼
24s	18¾
26s	19¼
30s	20¼
34s	22
36s	23
40s	24

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½ c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	16½
14s	17
18s	18
20s	19
24s	20
26s	21
30s	22
36s	24½
40s	26½
45s	30½
50s	32½
55s	38½
60s	41½

Eastern Two-Ply Warps, Carded Peeler

2/30s	22½
2/36s	25
2/40s	27
2/45s	31½
2/50s	33½
2/60s	42½

COTTON MILL NEWS

Tennessee, Knoxville. Work is practically completed on a small 2-story addition to the cloth room of the Brookside Mills. The cotton warehouse being constructed is only a temporary shed for the storage of cotton for a short time.

*Texas, McKinney. By running part of the spinning room day and night the Texas Cotton Mill Company have lost only one and a half day's production as a result of the damage to the plant by a tornado in January. Repairs on the building are about completed. It has been impossible to determine the exact loss, but probably it ranges between $8,000 and $12,000, covered by insurance.

Broad Silk and Ribbon Manufacturers cannot obtain their maximum production unless the 2 or 3 ply Spun Silk Yarn used for warping is free from imperfections and true to size.

We make a specialty of warping yarns either in the grey or dyed, put up on spools, cones, tubes or skeins. A sample lot will be gladly made up to your specifications on request.

We make singles in all sizes on cops in the grey. Do you want to see samples?

Nonotuck Silk Company

CORTICELLI SILK MILLS
Established 1838
SPUN SILK YARNS
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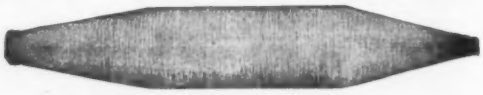

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Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

MONUMENT MILLS, HOUSATONIC, MASS.
HIGH GRADE COTTON YARNS White, Colors, Bleached
On Beams, Jack-Spools, Cones, Skeins and Chain Warps
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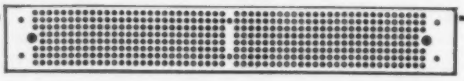
HIGHEST GRADE
BEST VALUE
Mills
RAINBOW, CONN.



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THE PHILADELPHIA MARKET

7s and coarser	15
8s and 9s	15
10s	15
12s	15-15½
14s	15½-16
16s	16½
18s	17
20s	17½
22s	18
24s	18½
26s	19
30s	20
40s	25
50s	32

Southern high grade mule yarns:—

Cones

10s	16½
12s	17
14s	17½
16s	18
18s	18½
20s and 22s	19-19½
24s	20

Southern frame yarn, lower grades:—

6s and 8s	14½
10s	14¾

Eastern cones (high grade quality):—

10s	17
12s	17½
14s	18
16s	18½
18s	19¼
20s and 22s	19¾-20¼

Skein yarn (mostly Southern):—

4s and 8s soft	14
10s and 12s	14½-15
14s and 20s	15-16½
22s	17
10/2	14½
16/2	15
20/2	16
30/2	18½
40/2	24
8/2	14½
7/6	14½

Southern warps:—

10/1	14½
14/1	15
16/1	15½
20/1	16
22/1	16½
26/1	18
30/1	19
8/2	14½
12/2	15
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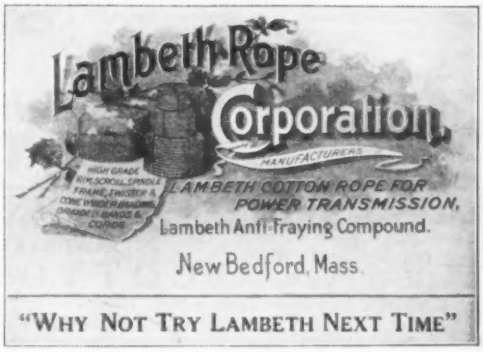
16/2	16
20/2	16½
26/2	18
30/2	19
40/2	24
50/2	32



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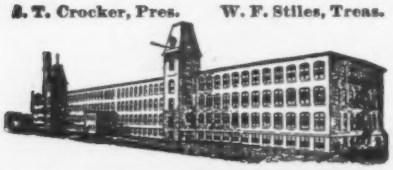

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Ramie Yarns and Threads
HAVE REMOVED
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THE LINEN YARN MARKET

The linen yarn market in Belfast is firmer than at date of our last report. Were it not for the fact that weavers are operating a large number of looms on cotton goods, the factories would have to close down. Inasmuch as a very large proportion of the linen manufacturers have their looms occupied on cotton orders, especially damasks, the situation is relieved. These cotton damasks are taking the place of the cheap linens and will continue to do so until normal conditions on the linen market are restored. For ordinary and legitimate business some of the mills in Belfast have sufficient yarns to carry them until the early months of 1916, while others less fortunate have but a few months stock ahead of them. It is well understood that nearly all the mills are on short time so as to make their flax supply last as long as possible. The American demand for linen is consequently curtailed as it is impossible for manufacturers in this country to pay the high prices and get returns for their money. Prices are very firm with a tendency to advance.

("A" Quality)

35s Lea on cones	83-90
50s Lea on cones	96
60s Lea on cones	1.00
80s Lea on cones	1.00
90s Lea on cones	1.10-1.15
100s Lea on cones	1.15-1.20
110s Lea on cones	1.30-1.40
120s Lea on cones	1.70

KNIT.

New Mills.

*California, San Diego. The new knitting plant being established at 942 Broadway, near 9th Street, is known as the San Diego Knitting Mills. They will manufacture sweaters, jerseys and bathing suits, beginning operations in a few weeks. Mrs. T. R. Wittenhoeffer is manager.

Canada, British Columbia, Vancouver. A number of sweater knitting machines have been installed by the Selkirk Garment Company at 976 Granville St.

*Canada, Quebec, Montreal. The Elite Hosiery Company, a new concern which has installed a number of knitting machines for making socks, is located at 31 Notre Dame St., E. F. R. Sylvester is the buyer. Fifteen knitting machines are operated by electric power.

*Georgia, Gainesville. The Gainesville Hosiery Mills reported incorporated several months ago with outhorized capital stock of $200,000 expect to begin the construction of the proposed new mill during March. It is planned to build and equip a plant for manufacturing men's, ladies', misses' and boys' hosiery, on 100 knitting machines and 4 sewing machines, using electric power and with dyeing and finishing departments. The Georgia Cotton Mills, a small local yarn mill with 2,668 spindles is being taken over by the new concern and will be conducted as a branch. Improvements will be made in this yarn mill from time to time. It was noted in December the Gainesville Hosiery Mills had purchased the Littleton (N. C.) Hosiery Mills, and this plant is being operated as a branch, making men's and ladies' hosiery. Archibald Coats Meldrum is president and buyer of the Gainesville Hosiery Mills; James Meldrum, treasurer; J. H. Reynolds, and H. A. Malcolm, assistant treasurers. Mr. Malcolm is manager and buyer of the Littleton, N. C., plant.

New Jersey, Camden. The property known as Citizens' Hall, located at 27th St. and Cleveland Ave., has been leased by Kline & Adams, of Philadelphia, manufacturers of hosiery, and knitting equipment will be installed. It is understood that employment will eventually be given to between 80 and 100 hands.

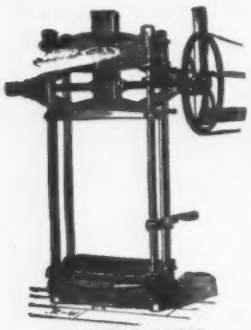
New Jersey, Newark. Plans have been made for a 2-story brick factory building to be erected at 777 South 18th St., for Hugo Lindner, which will be equipped for the manufacture of woolen sweaters. The cost of the building will be about $8,000.

New York, Ellicottville. It is announced that the Lander & Watson Hosiery Company, of Perry, N. Y., will shortly move to Ellicottville. Fitzpatrick & Weller, local manufacturers of last blocks, will erect a 2-story brick building to be occupied by the company and it is expected it will be ready by July 1. The company which will operate the business here has been organized with the following officers: W. D. Walrath, president; Michael Murphy, vice-president, and R. J. Lander, secretary and treasurer.

New York, New York City. H. Goldstein & Bro., 18 Orchard St., have started up a plant for the manufacture of 84-needle hosiery with an equipment of machines recently secured from a Pennsylvania knitting mill.

Pennsylvania, Allentown. The Weneck Mills are arranging to start up a plant at 617 Court St. on chinchillas and knitted fabrics, 8 heads having already been installed. These are being made made ready for operation.

*Pennsylvania, Boyertown. Fred S. Koons, Lewis Campbell, Aaron K. Lefever, Daniel B. Bauer, and Daniel C. Brumbach have supplied the required amount for the building of the 3-story factory building, 150 by 45 feet, of brick, steel and concrete construction, which is to be leased and occupied as a branch by John Blood & Co., of Philadelphia. The building is to be erected at once as a concern wishes to get into it as early as possible. 200 hands will be employed here manufacturing hosiery if this amount of help can be secured.



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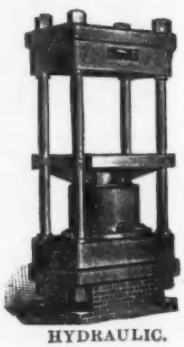

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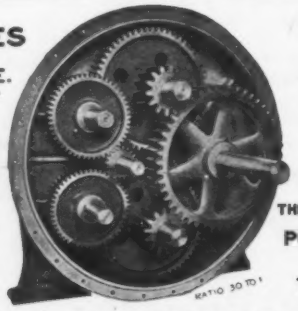

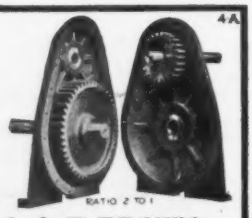

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have a very smooth finish

which allows the roving to be drawn from the can with practically no resistance, thus avoiding broken ends.

Vulcan Roving Cans

are light in weight, rigid, strong and very durable. Made of the best chemically treated fibre with tinned soft steel rings, accurate in size and perfectly round. Get our prices.

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James Hill Manufacturing Co.,

PROVIDENCE, R. I.

KNIT.

Pennsylvania, Hamburg. The Queen Underwear Mills have been started up here on high grade plain and fancy women's light and heavy weight cotton vests, pants and union suits. The plant contains 40 knitters and 60 sewing machines, the production being sold through W. H. Shelp & Co., New York, to the jobbing trade. The line has been quite successful in the market and a considerable amount of business has been booked for the various garments which they manufacture.

*Pennsylvania, Mohnton. Killian & Weinhold are starting up their plant under the name of the K. W. Knitting Mills, on seamless cotton half hose, maco foot, 176-needle goods. Twenty knitting machines, 5 ribbers and 2 loopers have been installed and others will follow as business improves. The plant is run by steam and they are buying 12s to 40s cotton on cops. The production is sold direct, no agent as yet having been selected by them to handle their product.

*Pennsylvania, Montoursville. A hosiery knitting mill has been established on Main St. by L. Lesher & Company for making half hose from 9s, 12s and 18s carded peeler yarns. The business will be incorporated about April 1. Part of the machinery was moved here from New Berlin. L. Lesher is superintendent and buyer.

Pennsylvania, Philadelphia. A charter for the Unique Knitting Company has been applied for by Jacob Kienel, Nathan R. Kline and Everett H. Browne, Jr. Mr. Kienel was formerly engaged in the knitting business as treasurer of the Bell Hosiery Co., N. R. Kline having also been engaged by the same concern as superintendent. Where or when the plant will be started up or what they will manufacture could not be ascertained.

Pennsylvania, Schuylkill Haven. R. J. Hoffman has increased his equipment to 13 latch needle and 9 spring needle knitters and 24 sewing machines on which he is manufacturing women's cotton underwear and selling direct.

Wisconsin, Sheboygan. The improvements to be made in the plant of the Hand Knit Hosiery Company during the spring are planned to take place when the new 3-story building, recently erected for warehouse purposes, is in use, which will be about May. The new building allows a great deal of space formerly used for warehouse purposes to be utilized in manufacturing.

Wisconsin, Superior. W. A. Whitney, owner of the Superior Knitting Mills, has withdrawn from the presidency of the United States National Bank and will devote all his time to the development of his manufacturing companies. A substantial enlargement of the Superior Knitting Mills is planned for the near future and the capacity will be practically doubled. Hosiery, sweaters and fancy knit goods are manufactured.

Mills Starting Up.

North Carolina, Cooleemee. The Cooleemee Hosiery Mills, which manufactured cotton half hose up to a year or two ago, has been taken over by new interests and started up.

WOOLEN.

*New Jersey, Passaic. The new 5-story addition to the Botany Worsted Mills, on which work was started several months ago, is now completed and is equipped with additional machinery for weaving. George Rohlig is superintendent.

North Carolina, Laurel Hill. Repairs are being made on the dam of the Ida Yarn Mill and the mill has been closed for a few days. Advantage was taken of the opportunity to overhaul the equipment.

Ohio, Cleveland. George S. Rider & Co., Century Bldg., architects and engineers, are preparing plans for two additions for the Cleveland Worsted Mills Company. One will be a 2-story building, 117 by 159 feet, and the other will be a 1-story building, 50 by 175 feet, to be used as a dye house.

Pennsylvania, Bridgeport. The Energetic Worsted Mills, with John J. Hosey as manager and superintendent, spinners of worsted yarns for weaving and knitting, on the Bradford system, have increased their equipment to 1,600 spindles with a prospect of further enlargements in the near future.

Rhode Island, Bridgeton. The Premier Worsted Mills have purchased the Clear River Mill which they have occupied for several years, and plans are under consideration for improvements to the property.

Rhode Island, Pascoag. Fred L. Sayles Company, manufacturers of worsteds, are installing electric motors in the carding and spinning departments.

Wisconsin, Waupaca. Machinery for finishing men's wool hats has been added to the equipment of the Waupaca Felting Mills.

Mills Starting Up.

*California, Eureka. R. E. L. Bedillion will start up the old Humboldt Bay Woolen Mill on headlining, carriage broadcloth, blankets and flannels. There are three sets of 60 inch cards, 5 360-spindle mules, and 20 broad looms. It was noted recently that Mr. Bedillion, who was formerly manager of the Bandon (Ore.) Woolen Mill, had leased the Humboldt Bay Woolen Mill property for a period of six months with the option of purchasing it at the end of that time for $24,000.

Canada, Ontario, Wiarton. A charter has been granted the Wiarton Woolen & Knitting Mills, Ltd., with capital stock of $50,000 and it is reported that the old Freeman Woolen Mill here is to be started up by the new concern. The Freeman Mill contains 1 set of cards, 4 looms and 4 knitting machines, and has been idle for several years.

Indiana, Columbia City. The new Columbia Woolen Mills have been started up and the concern has a large number of orders ahead. This company was organized about a year ago by William Fisher, formerly superintendent of the South Bend Woolen Company. A new mill has been built and equipped with 4 sets of cards, 2,560 mule spindles and 24 looms.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES - For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

METALLIC BREASTS Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS - Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

MULES—Heavy and Durable for Wool and Waste Yarn.

TWISTERS - Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

WARPING MACHINERY—Copper Cylinder Warp Dressers with single and double size pans; beamers; Section and Pinless Warp Mills, Creels and Dresser Spoolers for Wool or Worsted.

GRINDERS, Etc.—Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers; also Turning Rests, Fillet Winders, Card Clothing Stretchers and Cleaning Frames.

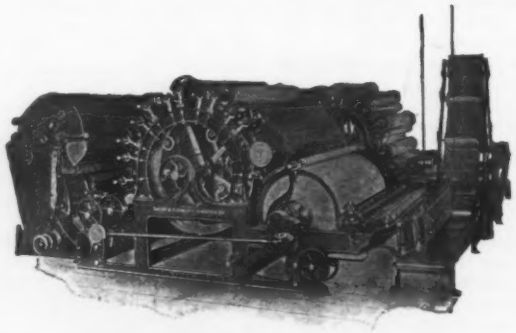
Special Circulars furnished for each Machine

Felting Machinery for Manufacturing Soft Felts or Commercial Batts, for Mattresses, Comforts, etc. from Cotton Waste, Linters, Jute, Wool and Wool Waste

A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging
Complete Equipment for Manufacturing Mop Yarn and Rope from Cotton Waste

Estimates and complete plans furnished

We build Cards in any style and size to suit your needs

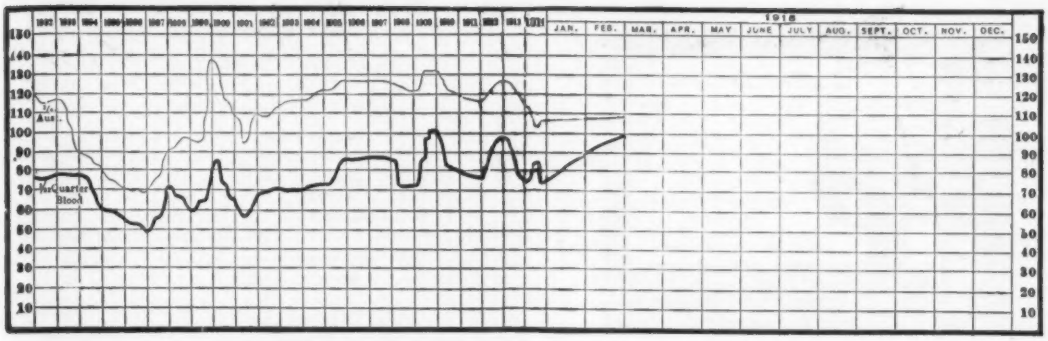


Send us your Specifications for Woolen or Worsted Cards

Two Card Set with Camelback Feeder

Such as is used for Asbestos and Carpet Yarns, etc.

S. K. F. Self-Aligning Ball Bearings on Main Cylinders
Self-Aligning Sleeve Bearings on all Cylinders
Case-Hardened Journals on all fast running rolls
A new, light, Cast-Iron Worker, cannot be dented
Convenient and positive adjustments
Many improved features



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

WOOLEN AND WORSTED YARN MARKETS

Spinners of worsted yarns report that the demand is becoming greater and of course they are gradually increasing their output to meet the wants of the consumers. The majority of this business is coming from the dress goods trade; the men's wear manufacturers are also coming into the market for yarns, realizing the fact that they must buy yarns now or the prices will be far beyond their limit later on, as it is not a question of the demand for goods, but a question of the supply of raw material. Even now some wools are hard to secure and of course yarns made out of these grades of raw stock will not only be hard to get, but where they can be bought will be very high in price.

French spinners are all busy on contracts. Specifications are now coming in from the trade and deliveries are being made with the result that spinners anticipate a good season, as they are aware of the fact that all their low priced contracts which they have on their books will have to be filled.

The yarns being bought today by the weaving trade are of such a wide range of counts that it is impossible to state what they are really buying with prices advancing from day to day as raw stock becomes scarcer.

Business from the knitting trade has also improved considerably. The bulk of the business is for 2/20s quarter blood yarns at 95 cents dyed and oxfords scoured with other sizes and qualities in proportion. Contracts are being placed with specifications calling for monthly deliveries the spinner refusing to take contracts under any other condition. Quotations are irregular and in some cases nominal owing to the unusual conditions:

BRADFORD SPUN YARN

2/12 to 2/16 low common	72-75
2/20 to 2/24 low 1/4	80-85
2/20 to 2/25 1/4 blood	85-87½
2/26 to 2/28 1/4 blood	95-97
2/32 1/4 blood	97½-1.00
2/20 3/8 blood	90-95
2/26 3/8 blood	95-97½
2/32 3/8 blood	1.00-1.02½
2/36 3/8 blood	1.02½-1.05
2/40 1/2 blood	1.05-1.07½
2/40 delaine	1.07½
2/50 delaine	1.12½-1.15
2/40 Australian	1.05-1.07½
2/50 Australian	1.10-1.15
2/60 Australian	1.25-1.30
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	92½-95
2 and 3 ply 10s-20s straight 1/4 blood	95-97½
2 and 3 ply 20s-24s straight 1/4 blood	97½-99½
2 and 3 ply 24s-28s straight 1/4 blood	99½-1.01½

(Reduce 8c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	95
1/20 high 1/4	97½
1/20 3/8	1.00
1/20 high 3/8	1.02
1/20 1/2 blood	1.02½
1/30 1/2 blood	1.04½
1/40 1/2 blood	1.06½
1/50 delaine	1.10
1/40 Australian	1.05
1/50 Australian	1.10
1/60 Australian	1.20-1.22½
1/70 Australian	1.25-1.27½

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

Pulley Truth
There are more than two million true and balanced AMERICANS in operation. Catalog will reveal their advantages.
American Pulley Co.
Philadelphia
New York, Boston, Chicago and good dealers everywhere
AMERICAN

William Whitman Co.
COMMISSION MERCHANTS
COTTON and WORSTED YARNS
BOSTON NEW YORK PHILA. CHICAGO CHARLOTTE

JAMES LEES & SONS CO.
MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
Mills and Office: Bridgeport, Montgomery Co., Pa.

J. B. Jamieson
77 Summer St., Boston
COTTON YARNS
of all descriptions
Correspondence Solicited

HAROLD R. SHIRLEY
242 Chestnut St., Philadelphia, Pa.
French Spun Worsted and Merino Yarns
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING

WOOL YEAR BOOK
In one volume are given outlines of woolen yarn manufacture, worsted yarn manufacture, on both English and French systems, weaving and finishing. There are numerous useful calculations, tables, recipes and notes. Brought up to date annually. 600 pages; green flexible leather. **Price, $1.00.**
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SOAPS HIGH GRADE SOAPS
Bleaching, Fulling and Scouring
SOAPS
Red Oil and Olive Oil Crown Soaps
J. O. Draper Co. Est. 1860 Pawtucket, R. I.

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	72
1/30 50/50 White Merino Cop	74
1/40 50/50 White Merino Cop	76
1/20 60/40 White Merino Cop	78
1/30 60/40 White Merino Cop	80
1/40 60/40 White Merino Cop	82
1/20 70/30 White Merino Cop	82
1/30 70/30 White Merino Cop	84
1/40 70/30 White Merino Cop	86
1/20 80/20 White Merino Cop	87
1/30 80/20 White Merino Cop	89
1/40 80/20 White Merino Cop	91
Sliver and Sanitary Mixes	3c. more
Coning on 1/20	2c. more
Coning on 1/30	3c. more
Coning on 1/40	4c. more

WOOLEN AND MERINO YARNS

A good many of the spinners of woolen and merino yarns make the statement that consumers are now specifying on all their former contracts and are also taking on all special lots that they can secure where the figures quoted are in any way below the present market prices. For yarns offered by the spinners at the regular price the buyers are also placing moderate orders. Prospects for future business are good and prices for all grades of yarns have a tendency to advance rapidly. Prices have already increased, within the past month, from ten to fifteen cents per pound on all grades and there is no indication of a drop for some time to come. Some spinners are running full with others claiming that they are becoming busier every day.

WOOLEN AND MERINO YARNS

2/20 Light Grey Mixed	80%	20%	65
2/20 Light Grey Mixed	90%	10%	67½-70
2/20 Light Grey All Wool			70-72½
2/20 Colored All Wool			77½-75
2/20 Bleached	80%	20%	75
2/20 Bleached	90%	10%	77½
2/20 Bleached All Wool			80-82½
2/23 Colored All Wool			75-77½
2/23 Bleached 90/10			85
2/23 Bleached All Wool			87½-90
2/25 Light Grey Mixed All Wool			90
2/25 Bleached All Wool			97½-1.00

Massachusetts, Concord Junction. The Strathmore Worsted Mills, which were closed in August, are being started up again. William Nasmith, agent of the Scotia Worsted Mills at Woonsocket, R. I., an affiliated company, makes frequent visits to Concord Junction, directing the setting up of machinery. The Scotia Mills and the mills of the United States Worsted Company are very busy.

THE RAG AND SHODDY MARKET

Prices for rags have advanced sharply since our last report and the market at the present writing shows no signs of a reaction. Practically all grades are in short supply and offerings are scattered. The result is that prices are very irregular, varying from 3 to 6 cents a pound from day to day. It is practically impossible to obtain many of the more desirable grades. No relief from this extraordinary situation is in sight. On the contrary it is by no means improbable that prices will go still higher and stocks become smaller. The shoddy mills are busy and have been forced to refuse orders at high prices owing to the impossibility of delivering material on time. The same conditions prevail in the wool waste market as in the market for rags and shoddy. Stocks are low and many kinds of material are impossible to obtain. Cotton waste is in small demand at unsatisfactory prices owing to the situation in the raw cotton market. We quite as follows:

SHODDIES AND EXTRACTS

White knit	38-40
Red flannel	23-25
Red knit	27-29
Thibelts	17-18
Fine dark merino No. 1	16½-17½
Fine light merino	29-30
Fine black merino No. 2	15-16
Light delaine	20-21
Mixed delaine	12-13
No. 1 dark worsted	16-17
No. 2 dark worsted	14-15
Black worsted	18-19
Fine dark worsted clips	19-20
Blue serge, old	24-25
New blue clip	16-20
New black fine worsted clip	27-28
Light yarn, fine	28-30
Dark mixed, fine yarn	22-24
Dark blue hosiery clips, No. 1	17-20
Dark blue hosiery clips, No. 2	14-16

NEW WOOLEN RAGS

Fine merchant tailors	14-16
Choice light worsted	16-18
Fine gray worsted	22-24
Coarse gray clips	14-16
Fine dark worsted	16½-17
Black worsted	22-25
Blue worsted	23-25
Brown worsted	18-19
Blue serge	23-24
Black serges	20-21
Light serges	22-23
Dark fancies	16-17
Dark serges	14-15
New blue flannel	15-16
New scarlet flannel	18-20

SOFTS AND KNIT STOCK

Soft woolen, best	11-11½
Red flannel	12
White softs	25-26
Merinoes, fine light	22-23
Thibets	12-13
Knit stock, red	15
Light gray, underwear	11-11½
Coarse gray	15
Blue knit	13½-14
Mixed hoods	9
White knit stock	27-28

You Save Enough Insurance to Pay for the Equipment

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

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2542 Seventh Avenue, New York City

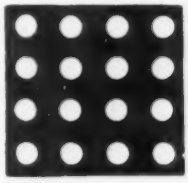
Our Specialty: Fibre Covered Shuttles Of Every Description

Samples sent on application

Woolen and Merino YARNS

Eaton Rapids Woolen Mills

EATON RAPIDS, MICHIGAN



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Rinsing and Carbonizing

In Special Metal

BECKLEY PERFORATING CO., Garwood, N. J.

OAK TANNED LEATHER BELTING

AND

PICKER AND ROLLER COVERING LEATHERS

CHARLES BOND CO., 520 Arch St., Philadelphia

You Get the Same Yarns that Cheney Silks are Made of

When you buy Cheney Silk Yarns, you get yarns of the identical quality that we ourselves use n making Cheney Silks, the leadership of which is unquestioned.

Cheney Silk Yarns

put you in a position to obtain the same perfection and popularity for *your* product that *we* have secured for Cheney Silks by the use of the *same yarns.*
Furnished in the gray or dyed; organzines and trams· doubles and singles; on spools, cones, warped or in the hank. Individual specifications solicited. Samples and quotations on request.

CHENEY SILKS

are of superior quality, and include practically every kind of goods made of silk—whether for dresses, millinery, decoration or upholstery, the haberdasher or manufacturer, man or woman.

CHENEY BROTHERS, *Silk Manufacturers,* 4th Ave. and 18th St., New York

National Silk Dyeing Co.

Main Office, PATERSON, NEW JERSEY, 140 Market Street

NEW YORK SALESROOM, 60 UNIVERSITY PLACE

Skein Silk Dyeing of every description for every class of textile manufacture.

Hosiery Dye—Boil-off, weighting and dyeing, treated especially to meet the requirements of the hosiery and knitting trade.

Piece Dyeing and Finishing—All silk and silk mixed goods.

Printing—Surface and warp printing.

WORKS:

Paterson, N. J. Dundee Lake, N. J. Allentown, Pa. Williamsport, Pa.

THE SILK MARKET

The raw silk market weak with some activity, buyers contracting for very little silk for future delivery. The Yokohama market is reported as easier on better grades, and firm on tram stock. The market remains quiet and sales are reported small. It is said that the New York market has 12,000 bales of silk on hand. The Canton market continues firm with little business, although it is reported that both American and European manufacturers have been buying to a considerable extent. Shanghai reports the market as quiet, and prices steady. Some look for an advance in prices in this market later on, but this is only problematical.

In Milan, Italy, the market is reported as fairly active and firm, much new product being bought for consumption in both Europe and this country. On future deliveries it is stated that prices are being advanced. Manufacturers are still playing a waiting game, preferring to hold off buying any great amount of raw silk until the spring business opens. Many of them seem to have enough silk on hand for their present needs. It is thought by well-informed men in the trade that the manufacturers stocks are getting much depleted.

The broad silk manufacturers report a fair business. Prospects seem bright for a good season. The extra yardage of the finished product which is being used in ladies' skirts has improved business.

Ribbons are still inactive and manufacturers in this line are not very hopeful as to the future. The millinery styles for spring did not call for ribbon trimming which was predicted, especially in the narrow widths, but in broad ribbons a better demand has developed.

It is reported that the dry goods people are still having a good business, and with every prospect of a good season.

Gros-de-Loudre, crepe de chine, meteors and taffetas are still popular. Foulards are also again in demand, while polka dots are becoming more popular. One of the most popular of the broad silk fabrics today is tussah pongee, which is having a great call.

As spring approaches the silk manufacturers and dealers are looking forward to a better business in all lines. While it is too early to predict how much silk will be worn, conservative estimates place the demand above the normal. Below are prices current:

European

Grand Extra Classical Piedmont	3.90-3.95
Extra Classical Italian 12/14 12/16	3.65-3.70
Classical Italian 13/15 24/26	3.50-3.55
Best No. 1 Italian 13/15 24/26	3.45-3.50

60 days' basis

VILLA, STEARNS COMPANY
Telephone, 6174 Gramercy
American Woolen Building
221 Fourth Avenue, New York
RAW AND THROWN SILK
Silk on Spools, Cones, Quills, Beams
DYED SILK FOR ALL PURPOSES
Philadelphia Office:
519 Bourse Building
Providence Office:
Howard Building

KROUT & FITE MANUFACTURING CO.,
MANUFACTURERS OF
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY
TELEPHONE CONNECTION
OFFICE AND MILL ALLEGHENY AVE. AND EMERALD ST., PHILADELPHIA

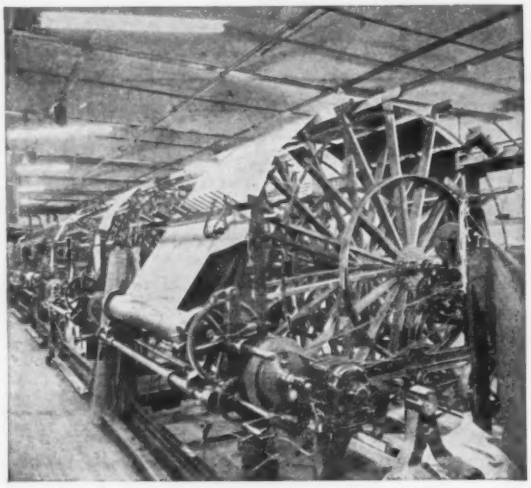
Watch The Pupils of The Eyes

of just one operative in your mill and see how they are from one second to another expanding, contracting — expanding, contracting! This is due principally to the really terrific variations of the brightness intensities of ordinary lighting.

In the course of a day's work, the eyes of your operatives go through a million such contractions and expansions in the process of **seeing.**

You can avoid this unnecessary strain and tax on the eyes by means of the soft, green, even light produced by Cooper Hewitt Lamps.

Indeed, for enabling factory workers to **see** clearly, acurately and with least effort, Cooper Hewitt lighting is the best that you can secure. It is actually :—



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SAUQUOIT SILK MFG. CO.
INSULATING AND BRAIDING SILKS
ORGANZINE, TRAM AND HOSIERY SILKS
Fast Dye Organzines for Woolen Manufacturers a Specialty

Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa. New York Representative, Wm. Ryle & Co., 225 Fourth Ave.
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Schappe Spun Silk

CASCAMI

Cordonnets and Noils

Cascami Silk Spinning Co. of America, (331 Fourth Avenue (Madison Square 5197)) New York City

WILLIAM RYLE & CO.,
FOREIGN AND DOMESTIC
SPUN SILK YARNS and NOILS

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

225 Fourth Ave., Corner 18th St., NEW YORK CITY

Japan

Filature Kansai Extra Extra	3.50-3.55
Filature Kansai Extra 13/15	3.35-3.40
Filature Shinshu Extra 13/15	3.27½-3.32½
Filature Kansai Best No. 1	3.17½-3.22½
Filature Kansai No. 1 13/15	3.20-3.22½
Filature Shinshu No. 1 13/15	3.05-3.10
Rereels No. 1 13/16	Nominal
Rereels No. 1 1/2 13/16	Nominal
Rereels No. 1 1/2-2	Nominal

6 months' basis

China

Canton XXA 14/16	2.80-2.85
Canton XXB 14/16	2.55-2.60
Tsattle Blue Dragon and Flying Horse	2.70-2.75
Tsattle Kun Kee Mars No. 1	2.45-2.50
Tussah Filature Eight Cocoon No. 1-2	1.00

6 months' basis

SPUN SILK

Nothing new can be said of this industry, except that the manufacturers report a much better business, and the outlook bright for the future. While no large orders are received, a steady buying movement has begun, which looks promising. Prices remain unchanged and are quoted below:

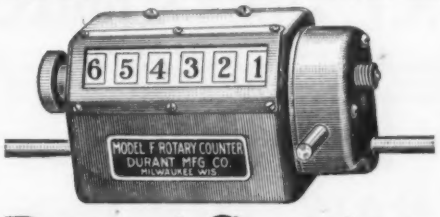
60/2	3.80
50/2	3.70
40/2	3.60
30/2	3.45
20/2	3.35
10/2	3.25

ARTIFICIAL SILK

This industry still remains quiet with very little business being done. It was thought that the braid manufacturers would use some of this product, but this prediction has not come true. No change in prices, which appear below:

150 Deniers English A.—bleached	1.95
150 Deniers English B.—bleached	1.85
150 Deniers English C.—bleached	1.57

GUARANTEED ACCURACY is one of the features of the PRODUCTION RECORDS you obtain by installing



Durant Counters

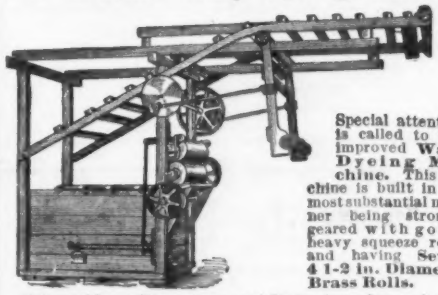
wherever a count or measurement in any unit is of value in mill management. Built to meet the needs of exacting conditions, you can depend upon their count, apply them easily to all classes of machines and profit largely from the savings effected over other counting methods.

Ask for Catalog 20 and free trial offer.

Durant Mfg. Co., - Milwaukee, Wis.

Wm. V. Threlfall - - - - - Marshall Bldg, Boston
Charles Hammer - - - - 630 West Broadway, New York

The Reliance Warp Dyeing Machine



Special attention is called to this improved **Warp Dyeing Machine.** This machine is built in the most substantial manner being strongly geared with good, heavy squeeze rolls, and having **Seven 4 1-2 in. Diameter Brass Rolls.**

This machine, with our improved Plater-down has met with marvelous success, and parties desiring machinery of this class, can make no mistake on ours. For further particulars and prices, address

RELIANCE MACHINE WORKS
Hedge and Plum Sts., Frankford, Phila.

SPUN SILK
YARNS FOR ALL PURPOSES
AMERICAN SILK SPINNING CO., PROVIDENCE, R.I.

MINDLIN & ROSENMAN
Importers and Manufacturers of
RAW and THROWN SILK, ARTIFICIAL SILK
Mercerized and Cotton Yarns, Yarns and Threads
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Our Specialty:
DYED SILK FOR THE KNITTING TRADE
on cones and tubes
Factory and Dyehouse, **Brooklyn, N. Y.**

A. P. VILLA & BROS.

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CANTON
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MILAN
TURIN
LYONS

95 MADISON AVENUE

RAW, THROWN
AND
DYED SILKS

Silk on Quills or Beams

Hosiery Silk on Cones

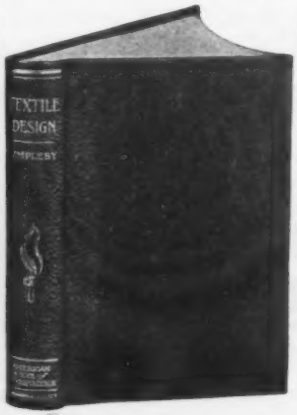
Telephone 10080 Madison Sq.

Mills: Passaic, N. J.

Textile Design

By FENWICK UMPLEBY

For Cotton, Wool, Worsted and Silk



Beginning with the use of design paper the subjects of designing plain cloths, double and triple cloths, pile fabrics, and jacquard designing are covered. Includes chapter on cost finding. 350 pages, 400 designs and illustrations, half leather binding.

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Express paid

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Boston, Mass.

SILK.

.....

*New York, Binghamton. The Ballard Silk Company is not in a position to make any announcement regarding the proposed addition. It has been reported that the capacity would be increased to 75 or 100 looms, and plans are being made for an addition, 40 by 80 feet, to be ready April 1. H. D. Ballard is manager.

New York, Newburgh. The equipment of the Palatine Silk Company has been increased from 20 looms to 40 looms. Dress silks are woven. John Deisseroth is president and treasurer; G. Haible, vice-president, and F. W. Fulds, secretary and superintendent.

Pennsylvania, Bangor. A building on West Messinger St. has been leased by the Sterling Silk Glove Company and will be equipped with machinery for manufacturing silk underwear. Recently a 3-story addition was completed. The Sterling Silk Glove Company manufactures silk gloves and mittens on present equipment of 10 knitting looms and 150 sewing machines. W. F. Jordan is president, and W. R. Jordan, treasurer, superintendent and buyer.

Pennsylvania, Columbia. Schwarzenbach-Huber Company will build an addition to connect the two buildings comprising their Columbia plant. A modern elevator also will be installed. The local mill was formerly known as the Ashley & Bailey Mill and was taken over less than a year ago by Schwarzenbach-Huber Company of W. Hoboken, N. J., who have a number of branch mills in this State.

Pennsylvania, Easton. The Roehlen-Pittenger Silk Company, who recently purchased a mill building and moved their machinery into it, expect to add 16 to 20 looms in the near future. They have considerable space surrounding the mill on which they can erect an addition.

*Pennsylvania, East Stroudsburg. The Fellows-Huber Company, manufacturers of silk dress goods and tie silks, are running night and day with two shifts of operatives, and an increase of 16 new looms, with winders, quillers and a warping machine, will be made, the new looms being installed on the second floor. This will give them equipment of 112 looms.

Pennsylvania, New Holland. Storb Snader & Co., who built a large addition to their plant during 1914 and added 40 looms, will make a further addition of 80 looms in the near future. The plant is now operated by steam and electric power. Broad silks are manufactured on present equipment of 290 looms.

Pennsylvania, Slatington. The O. H. Waeckerli Silk Company, recently reported as starting up in this town, is manufacturing broad silks on 24 looms, selling the product direct. They report that the company is arranging to incorporate the business and also has under consideration the erection of a mill sufficiently large for the installation of 100 looms.

SILK.

New Mills.

*Canada, Quebec, Sherbrooke. Julius Kayser & Co., 45 E. 17th St., N. Y., are the parties interested in establishing a new silk hosiery, glove and underwear plant in Sherbrooke. The main plant is in Brooklyn, and branches are operated at Owego, Hornell, Sidney and Amsterdam, N. Y., and Grenoble, France. Operations will be started in the spring in leased quarters in a building on Frontenac St., but later on buildings will be erected by the concern.

New Jersey, Paterson. J. Egleson, formerly superintendent of Johnson, Cowdin & Company, silk throwsters, and manufacturers of silk ribbons, is erecting a building at his home at North Paterson in which he will install a ribbon manufacturing plant.

*New Jersey, Paterson. About the first of May the Weston E. Good Company will start up the branch plant to be equipped at 47 State St., in the building recently purchased from the National Mill Supply Company. 10,000 spindles will be operated on silk throwing by electric power. Weston E. Good is president, manager and buyer.

*Pennsylvania, York. G. Kessler and B. Waters, of this city, have started manufacturing broad silks with 12 looms under the style of the Western Silk Company. The building occupied is a 2-story brick structure, 40 by 96 feet, owned by the Western National Bank and was at one time operated as a gun factory. George Greenwood, of York, is the manager.

Enlargements and Improvements.

Massachusetts, Holyoke. It is reported that William Skinner & Sons will take up the manufacture of spool silk, which they are said to have discontinued some time ago. To make room for this department a rearrangement of machinery will be made, some of the looms being moved from their present location.

New Jersey, Paterson. The James H. Farrar Silk Company has purchased the broad silk plant of I. Nussman, sold for rent, and will move the machinery to their part of the Atherton Mill.

New Jersey, Paterson. The plant of the Acme Textile Company, commission warpers and winders, was destroyed by the recent fire in the Hamil Mill. New space has been secured in the Johnson and Van Vlaanderens Mills and the concern will resume operations.

New Jersey, Paterson. The Tiger Silk Company, located in the Hamilton Mill, expect to add looms in the near future.

New Jersey, Paterson. The Paterson Silk Company is installing more looms in its plant in the Atherton Mill.

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Macungie, Pa.
Bindings and Ribbons
For binding Cotton and Woolen Bed Blankets, Go-cart Covers, Kimonas, Bath Robes, etc.
Special Colors or Shades made to order

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Tram, Thrown Silk, Organzine, Artificial Silk
Domestic and Imported, Plain, Gassed and Mercerized. Polished and Glazed Cotton, Mohair, Worsted and Tinsel.
Best Quality Harness Twine
107-109 Greene St., New York
Silk Throwing Mills, PEACON and YONKERS, N. Y.
YARNS

Alexander Smith & Son
Warping and Winding on Commission
Work Done on Frames with Swiss Motion
All Goods Fully Insured
Raw Silk Warping a Specialty
Cor. Centre and Glendale Streets *EASTON, PA.*

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Also Power Transmission Supplies for General Mill Use
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United States Conditioning & Testing Company
Cotton, Wool and Silk Conditioning
Fabric Testing and Chemical Analyses
Offices and Laboratories, 340-44 Hudson St., (cor. Charlton St.)
NEW YORK
D. E. Douty, Mgr. F. G. Boye, Supt. K. B. Lamb, Chem. Eng.

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Commission house of old standing with representatives covering the entire United States desires accounts for such goods that are sold to the white goods and linen departments, both retail and wholesale. **Towels and Mercerized Damask, etc., or any kind of plain or fancy Cotton Goods.** Will make investment in factory, make advances or buy the goods outright if necessary, but must have sole control of the line. Address "Commission Merchant," care of Textile World Record, 120 Liberty Street, New York.

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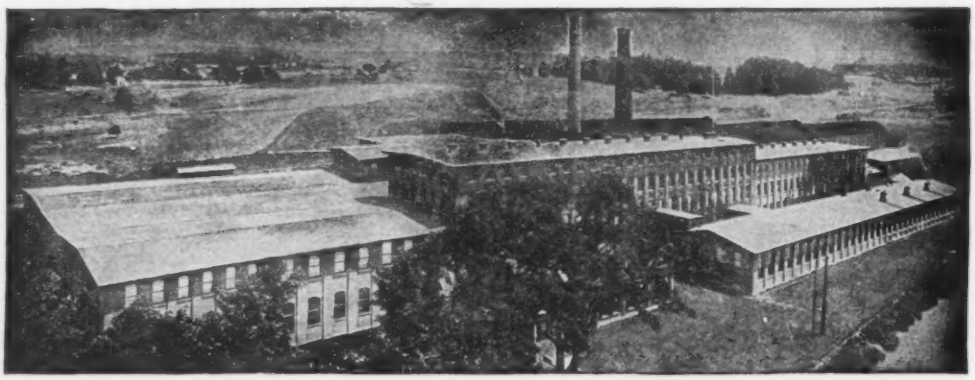

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Sheetings, Shirtings, Lawns, India Linons.
Everything in White Goods.
Capacity, 30 Tons Daily

JOHN MacMANUS, Manager CHADWICKS, N. Y.

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THE WEAVER'S FRIEND

IT BOILS THIN. PENETRATES THE WARPS. INCREASES BREAKING STRENGTH. THE STANDARD SIZING AND FINISHING STARCH FOR TWELVE YEARS. A TRIAL WILL CONVINCE YOU.

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Organized 1853 MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $6,000,000

ASSETS, January 1, 1914.....$33,139,915.81
LIABILITIES (Except Capital)..... 17,066,896.12
SURPLUS AS REGARDS POLICY HOLDERS.. 17,873,019.69
Losses Paid Since Organization over 145,000,000.00

INDEMNITY
For Loss of
Profits
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Use and
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on acceptable
Protected Plants
at the
Minimum Rate

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

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DYESTUFFS AND CHEMICALS

The unsettled conditions in the dyestuff and chemical trades caused by the European situation make it impossible to get quotations which would be of any value to our readers. The dyestuff and chemical list of quotations will therefore be omitted until this trade is again on a normal basis.

FIRES.

Canada, Ontario, Toronto. A fire in the plant of the York Knitting Mills, Ltd., 993 Queen St., which originated in a picker machine, caused loss of about $1,000, covered by insurance.

Connecticut, South Glastonbury. A fire which broke out in the picker room of the Glazier Mfg. Company was put out with slight damage.

Kentucky, Louisville. A fire in the plant of the Louisville Sweater Mfg. Company, at 121 West Market St., caused a small loss, estimated at $300.

Massachusetts, Blackinton. Damage estimated at $4,000 was caused by fire in the picker room of the Blackinton Company. The loss is chiefly by water, a lot of dyestuffs being damaged. The plant is being continued in full operation and the damage to the building is being repaired at once.

New Jersey, Paterson. Infald Bros., the Metropolitan Silk Co. and the Davis & Arbus Silk Co., manufacturers of broad silks, suffered considerable damage by a fire in the Hamil Mill, corner of Mill and Market Sts. Jacob Dime, a silk throwster, also suffered a heavy loss.

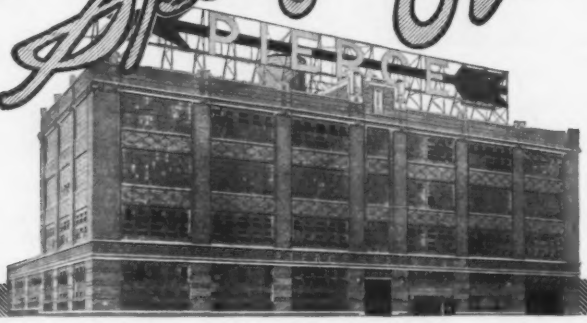
North Carolina, Charlotte. The plant of the Charlotte Cotton Fibre Company, manufacturers of mattress felts and batts, has been destroyed by fire, with loss estimated at between $50,000 and $60,000.

Pennsylvania, Philadelphia. A fire in the picker room of Beswick & Clay Co., Inc., 2512 Callowhill St., caused slight damage.

Rhode Island, Warren. A 2-story mill owned by the Cutler Mills has been gutted by fire with damage estimated at $10,000. The heaviest loss is sustained by the Mestra Mfg. Company of Rhode Island, Reginald A. Morse, proprietor, who manufacture sanitary napkins with 30 knitting machines, and occupied the second floor of the building. The Mestra Mfg. Company advise that they will relocate in an enlarged plant and endeavor to resume the shipment of goods not later than March 15, although for the present a new location has not been decided upon. The concern may be addressed at Barrington, R. I.

*Maine, East Wilton. Allen, Lane Company have leased the Walker Mill property to Everett W. Adams, for a period of two years, with option of purchasing, and the weaving department will be started up by Mr. Adams on worsted goods. Yarns will be bought and it is understood the goods will be sent away to be finished. Mr. Adams has been overseer of weaving at the Daniels Worsted Mills, W. Rutland, Mass., and was at one time assistant superintendent of the Wesserunsett Worsted Mills at Skowhegan, Me. His home is at Allen's Mills, Me.

Barrett Specification Roofs



Supply Building for Pierce-Arrow Auto Agency, Long Island City, N.Y.
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Builders: Thos. J. Steen Co. New York City
Roofer: Daniel Skelton, N. Y.

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GRAVEL and slag roofs laid along the lines of The Barrett Specification cover most of the first-class buildings of the country, because the experience of more than 60 years has proven that—

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3rd—Their unit cost per year of service is lower than any other.

Claims regarding roofings should be met with this question: "How many can you refer to who have used say 500 squares of your roofing on a comparatively flat surface for 10 years and bought more?"

Then investigate such claims!

We can supply hundreds of names for this purpose.

Exaggerated statements sometimes sell roofing, because the principles of Barrett Specification Roofs are not well known to the purchaser. Once he understands the long service they give, and the low unit cost, he will have no other kind.

Copies of The Barrett Specification free on request

Hotel Mason, Jacksonville, Fla.
Architects: Frohling & Laxellys, New York, N. Y.
Contractors: Frank Richardson Co. Jacksonville, Fla.
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THE PATERSON MFG. CO., Limited:
Montreal Toronto Winnipeg Vancouver
St. John, N.B. Halifax, N.S. Sydney, N.S.

MILL STOCKS

FALL RIVER MILLS

	Bid.	Asked.
American Linen	50	57½
Arkwright Mfg. Co.	...	65
Barnaby Mfg. Co.	...	40
Barnard Mfg. Co.	...	57½
Border City Mfg. Co.	100	...
Bourne Mills	101	...
Chace Mills	101	102½
Charlton Mills	85	...
Conanicut Mills	...	95
Cornell Mills	145	95
Davis Mills	90	...
Davol Mills	87½	92½
Flint Mills	96½	...
Granite Mills	75	...
Hargraves Mills	...	38
King Philip Mills	102½	107
Laurel Lake Mfg. Co.	97½	100
Lincoln Mfg. Co.	...	72
Luther Mfg. Co.	115	...
Merchants Mfg. Co.	70½	...
Mechanics Mills	72½	77½
Narragansett Mills	88½	...
Osborn Mills	...	97
Parker Mills	35	40
Pilgrim Mill, pfd.	...	90
Pocasset Mfg. Co.	...	92½
R. Borden Mfg. Co.	123½	...
Sagamore Mfg. Co.	175½	...
Seaconnet Mills	...	55
Shove Mills	70	75
Stafford Mills	70	75
Stevens Mfg. Co.	120	125
Tecumseh Mills	104	...
Troy C. & W. Mfg. Co.	...	...
Union Cotton Mills	...	170
Wampanoag Mills	...	70
Weetamoe Mills	...	80

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	147½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	112½	...
Booth Mfg. Co., com.	10	...
Booth Mfg. Co., pfd.	60	...
Bristol Mfg. Co.	...	55
Butler Mill, com.	...	75
Butler Mill, pfd.	98	...
City Mfg. Co.	...	86
Dartmouth Mfg. Co., com.	*138	...
Dartmouth Mfg. Co., pfd.	101	...
Gosnold Mills, pfd.	88	90
Grinnell Mfg. Co.	170	180
Holmes Mfg. Co., com.	110	...
Holmes Mfg. Co., pfd.	107	...
Hathaway Mfg. Co.	150	...
Kilburn Mill	105	...
Manomet Mills	114	...
Nashawena Mills	...	66
Neild Mfg. Co.	100	...
N. B. Cotton Mills Corp., com.	100	...
N. B. Cotton Mills Corp., pfd.	99	...
Nonquitt Spinning Co.	...	84
Page Mfg. Co.	75	...
Pierce Mfg. Co.	200	...
Pierce Bros.	100	...
Potomska Mills	118	...
Quisset Mills, com.	107	110
Quisset Mills, pfd.	105	...
Sharp Mills, com.	88	...
Sharp Mills, pfd.	...	102½
Soule Mills	...	62½
Taber Mills	...	100
Wamsutta Mills	120	...
Whitman Mills	120	...

*Ex dividend.

CANADIAN MILLS

C. Cottons, pfd.	...	71
Dominion Textile	64	66
Dom. Textile, pfd.	...	101
M. Cottons, pfd.	...	99

OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	*62
Amoskeag Mfg. Co., pfd., N. H.	100	101½
Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80
Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	*220¼
Bigelow-Hartford, pfd.	100	*105⅛
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	105¼
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mills, Me.	100	*1035
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	190¼
Everett Mills, Mass.	100	109
Fisher Mfg. Co., Mass.	100	125½
Franklin Co., Maine	100	201½
Great Falls Mfg. Co., N. H.	100	*170½
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., Me.	1000	890
Lancaster Mills, Mass.	100	*60
Lawrence Mfg. Co., Mass.	100	151¾
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	126⅛
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	125½
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	114
Merrimack Mfg. Co., pfd., Mass.	100	83
Middlesex Co., Mass.	100	56
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	1000
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	195¼
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1352½
Pacific Mills, Mass.	100	*112½
Pepperell Mfg. Co., N. H.	100	334¼
Plymouth Cordage Co., Mass.	100	218½
Salmon Falls Mfg. Co., N. H.	300	275
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndike Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	97

Waltham Bleachery & Dye Works, Mass.	100	*100¼
York Mfg. Co., Me.	100	85

*Sales since December 15, 1914.

SOUTHERN MILLS

	Bid.	Asked.
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Avondale	120	126
Arlington	130	136
Brookside	...	...
Cannon	125	...
Carbarrus	115	120
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Clara	100	...
Cliffside	100	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Erwin, pfd.	100	...
Easley	...	125
Florence	125	126
Gibson, com.	...	106
Grendie	...	96
Glenwood	...	150
G'en Lowry, pfd.	...	76
Highland Park	...	200
Highland Park, pfd.	...	101
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	125
Kesler	140	160
Loray Mills, pfd.	...	86
Modena	...	105
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-Six	130	140
Orr	...	86
Ozark	100	110
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Salisbury	150	...
Roanoke Mills	...	155
Saxon	...	131
Spartan	109	...
Toxaway	...	131
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	...	...
Washington Mills, pfd.	...	100
Woodside Mills Co., com.	...	88
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Woodruff	...	107
Young Hartsell	90	...

Pennsylvania, Montello. The plant of the Highland Hosiery Company has been taken over by P. D. Ludwig and A. M. Ruth, of Sinking Spring, and will be continued under the name of the Montello Knitting Mills. Mr. Ludwig will be president and Mr. Ruth, treasurer, superintendent and buyer. Seamless half hose, 144 to 200-needle goods, will be made on 60 knitting machines, 10 ribbers and 6 loopers, using 10s, 12s and 40s single yarns.

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Opaqueness. Weight. Thoroughly Penetrates the Warp. Strengthens Goods.

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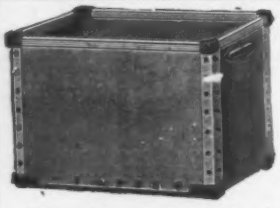

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Barrels
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Will neither dent nor break when subjected to hard usage. Stronger than wood, lighter than steel. *Write for folder.*

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Branches in Principal Cities

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RIGHT IN QUALITY

A single brush costs little, but when you are buying for a big mill the total cost runs high.
Moral: get the best—

That Means Felton's Brushes

Buying more raw material and making more mill and factory brushes than anyone else, we can give high quality at low prices and we do.
Send for the book "Felton's Mill Brushes."

S. A. FELTON & SON CO., Manchester, N. H.

FACTS AND GOSSIP.

Canada, Ontario, Belleville. W. C. Dempsey, 219 Albert St., previously reported interested in information on equipment for manufacturing cotton batting and cotton sheet wadding, will equip a plant during the summer if information is secured which will convince him and his associate, John Downey, that such a business would be profitable.

Canada, Ontario, Dunnville. Reports that the Erie Woolen Mills of John Slingsby are idle and for sale, are incorrect. The mill is now running and has been running all winter. Woolen knitting yarns and woven fabrics are manufactured.

Canada, Ontario, Hamilton. The Bell Thread Co., Ltd., is running all departments full time and some departments overtime. Cotton threads of all ply, counts and colors are manufactured.

Canada, Ontario, Toronto. The Toronto Yarn Spinning Co., Ltd., is operating its plant day and night. Wool and worsted yarns are manufactured.

Connecticut, Buckland. The E. E. Hilliard Company plans to purchase a large auto truck in the spring.

Connecticut, Central Village. The Plainfield Woolen Company is running overtime evenings until nine o'clock, on uniform cloths.

Connecticut, Middletown. The Rockfall Woolen Company has resumed the full time schedule after a long period of curtailment.

Connecticut, Putnam. The Nightingale-Morse Mills, Inc., have equipped a part of their plant for making corduroys and velveteens and are meeting with a very good demand for these products. The Manhasset Mfg. Company has completed the enlargement started last October and is using it for the manufacture of tire duck. The company continues to receive large orders for its product and the plant is running night and day with two shifts of operatives. The Putnam Woolen Company is busy on uniform cloths for export, and Hammond, Knowlton & Co. are busy on a rush order for 25,000 pounds of machine twist to be used, it is understood, in the manufacture of uniforms. The plant of the Waterman Worsted Company has resumed its night and day schedule to fill rush orders.

Connecticut, Stafford Springs. Smith & Cooley, manufacturers of shoddy, flocks and waste, have started on a night and day schedule.

Connecticut, Willimantic. The Willimantic Mills of the American Thread Company will shortly go on full time. A week ago the hours of work were increased after a long curtailment and an official of the company is quoted as stating that there is more business on hand than for some time and that the prospects are very encouraging.

Connectic, Yantic. The Admore Woolen Mills Company is reported to be giving employment to more hands than were ever employed before at the original plant.

Florida, Ormond. J. B. Jackson, of this place, is considering plans for establishing a small rug weaving factory.

Interruption of Production

is recognized by textile mill operators as the most costly element of repairs.

Allis-Chalmers TEXTILE MOTORS

are so liberally designed and so sturdily constructed that they will operate for years without need of repairs providing they are properly supplied with oil while in service.

"Motors for all drives"

Allis-Chalmers Manufacturing Company

Power and Electrical Equipments

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ATTENTION

Mill Managers, Superintendents and Overseers

YOU are keen for information that bears on the operation and maintenance of your mill at ***reduced cost,*** made possible by increased efficiency. To aid you in your problem we have just published a text-book dealing with the operation of textile machinery at minimum cost for maintenance and lubrication—a book which clever mill-men tell us contains mighty valuable information.

IT is entitled "Lubrication of Textile Machinery" and we have reserved a copy for YOU. If you will promptly send us your address we will be happy to mail YOUR copy. No obligation whatever.

New York and New Jersey Lubricant Co.

165 Broadway, New York. 1430 Michigan Ave., Chicago, Ill.

Illinois, Peoria. The Peoria Cordage Company is experiencing an extraordinary demand for cordage and twine due in part to the large export requirements, and another mill is being started up on a night and day schedule.

Indiana, Columbia City. The new Columbia Woolen Mills, which recently completed a plant here and began manufacturing, has started on a schedule of fifteen hours a day. William Fisher, formerly superintendent of the South Bend (Ind.) Woolen Company, is manager and buyer.

Louisiana, New Orleans. The McGinnis Cotton Mills and the Kohlmann Cotton Mills & Mfg. Company will operate their plants day and night, and are advertising for operatives. Louis Kohlmann is quoted as stating that orders on hand will insure work for several months on the increased scale.

Maine, Biddeford. The reorganization plan of the Pepperell Mfg. Company was ratified at a meeting of the stockholders and it is expected will become effective March 15. The reorganization requires the transfer of all stock to a voluntary association under the same name and the shareholders are to receive three shares of new stock for one of old. The capitalization will be $7,668,000, or three times the present capitalization.

Maryland, Baltimore. Articles of incorporation have been filed by the Mt. Vernon-Woodberry Mills, Inc. The company has capitalization of $13,600,000, classified as $8,000,000 seven per cent. preferred and $5,600,000 common. It is intended to take over all the properties of the old Mt. Vernon-Woodberry Cotton Duck Company, which are now operating at about 90 per cent. capacity. George Cator is president and John J. Nelligan, secretary and treasurer. These officers, according to report, will not be permanent.

Massachusetts, Adams. Improvements have been completed in the power department of the Renfrew Mfg. Company and the mill was closed for two days last week while this work was in progress. The machinery installed in the new building recently erected is being run by electricity furnished by the New England Power Company. The remainder of the plant is still operated by steam and water power.

Massachusetts, Athol. H. W. Brown, proprietor of the Homestead Woolen Mills at West Swansey, N. H., is negotiating with L. S. Starrett, a tool manufacturer, for the lease or purchase of the buildings on E. Main St., formerly operated by the Millers River Mfg. Company. The property in question has been idle for the past year or two. The Millers River Mfg. Company made bed blankets, horse blankets, linings and shoddies on 6 sets of cards and 50 looms. The Homestead Woolen Mills manufacture flannels on 5 sets and 44 looms.

RATS AND CONTRACTS (ANNOUNCEMENT)

72 Front Street, New York, February 1, 1915.

To Mill Owners and Superintendents:

The VIRUS LIMITED INC. of 72 Front Street, New York, wish to announce that they have taken over the business formerly conducted by the DANYSZ VIRUS LIMITED, of the same address and that they are now prepared to accept yearly contracts for the extermination of rats and mice and that in connection with all such contracts the wonderful bacteriological preparation, DANYSZ VIRUS, discovered and prepared by Dr. Jean Danysz of the Pastuer Institute of Paris will be used exclusively. This company also manufactures a roach exterminator of the greatest merit and we will be glad to send a sample of same to those interested in giving same a trial. Write for full information.

Yours truly,
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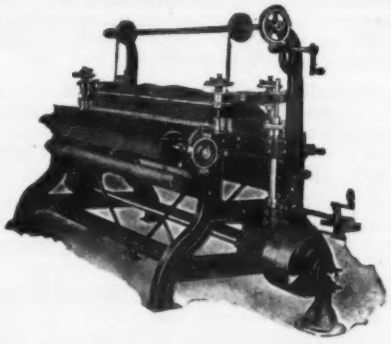

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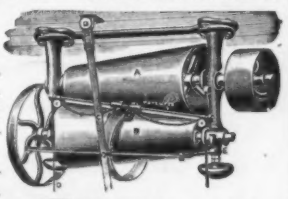

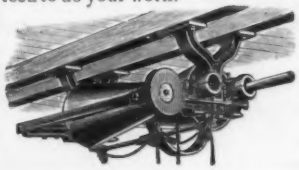

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Compiled by the Textile World Record

Here's a Hint of What It Contains

Over 15,000 Different Concerns Listed

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Full information is given about each mill in almost every instance, viz.: the name of the company or firm, names of officers, agent, superintendent, the character of goods made, machinery equipment, i. e., the number of sets of cards (or combs). the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct, and in many instances the name of the man is given who buys the raw material and supplies. In this section of the Directory all the mills in one place are arranged under the head of that town, but so designated by boldface letters that the kind of mill is determined at a glance, so that a person looking, for instance, only for woolen mills can pick them out instantly. This system of arrangement is conceded to be the most convenient of any as it groups all the mills in one town together and is self-indexing, while at the same time those interested in a particular class of mills, such as cotton, silk, or knit, can find them as easily as if they were classified separately.

The Map Feature was originated by the Textile World in 1894, and is copyrighted. There are 19 of these textile maps, which show only the cities and towns where there are textile establishments. 19 maps.

An Alphabetical Index to the textile establishments in the United States and Canada, about 7000.

Mills with Worsted Machinery. A separate list is compiled of mills with worsted machinery for the convenience of those dealing exclusively with that branch.

The Yarn Trade Index. In this department are classified lists of manufacturers of different kinds of yarn who spin for the market. It gives the size of yarn spun and the form in which the yarn is put up, together with the selling agents of the mills, or if sell direct. About 900 names.

Classified List of Manufacturers This is a new section in which all the manufacturers of textile fabrics are listed under suitable headings showing the classes of goods made.

Commission and Order Section. In this department are classified lists of establishments doing dyeing, bleaching, printing, finishing, and mercerizing on order, sub-divided according to the class of work done. About 500 names.

Raw Material Section. In this department are complete lists of dealers and brokers in wool, cotton, shoddy, waste and extracts, and wholesale rag dealers. About 2500 names.

Selling Agents and Dry Goods Commission Houses in the principal cities of the United States, giving the character of goods handled. About 2300 names.

Textile Associations. Owing to the growing number of inquiries for information of the various associations a list of all the textile associations in the United States and Canada has been included in this year's Directory. The names of associations, officers and addresses are given.

Machinery and Supply Section. This contains a carefully classified index of builders of textile machinery and dealers in mill supplies. About 800 names and 500 headings.

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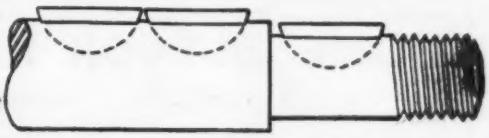

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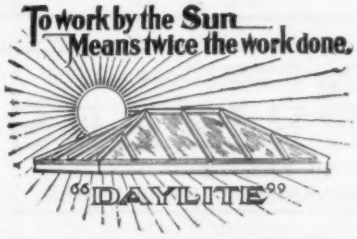

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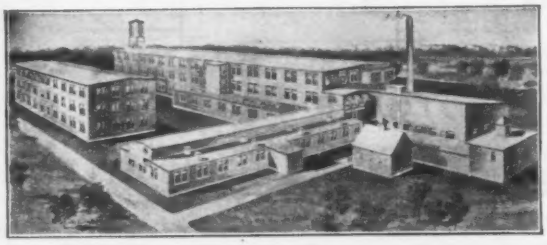

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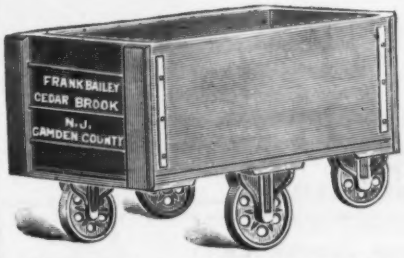

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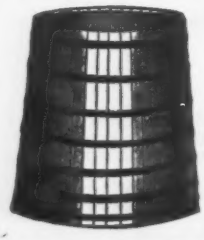

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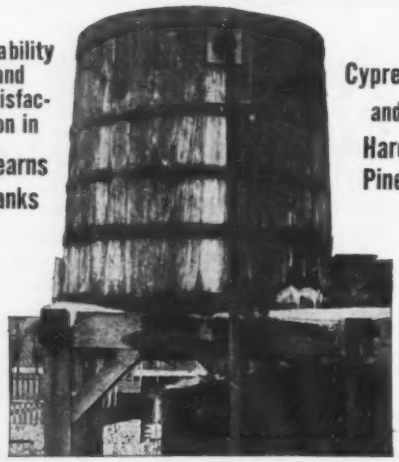

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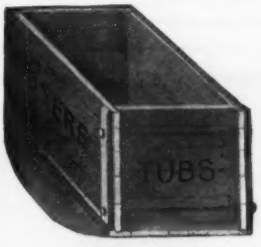


AMOS H. HALL, SON & CO.

Established 1868

Cedar Vats and Tanks

Tubs and Tanks of all kinds for Dyers, Bleachers, Factories, etc.

2915-2933 North Second St. PHILADELPHIA, PA.

Down Town Office, 140 Chestnut St., Corner Second
Hours from 12 to 1

ARABOL MANUFACTURING COMPANY

100 William Street, New York

Sizing, Stiffening, Softening and Finishing Compounds, Glues, Gums, Dextrines, Starches, China Clay, Bone Size and Grease, Soap, Tallow, Weighteners

EVERYTHING IN SIZINGS, Etc. SAMPLES MATCHED. HIGH GRADE GOODS

Norwood Norwood

Mechanical Filters

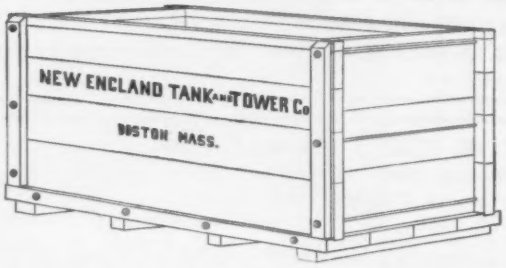
GRAVITY AND PRESSURE TYPES

Cleanse Water—Save Losses—Promote Business Success

Norwood Filters are sold with a Guarantee which can be given because every one is built to suit location and condition.

We don't sell you any old filter but investigate first.
Then we build a filter to suit your requirements.

Write For Our Experts | **Norwood Engineering Co.** Florence, Mass. | Expert Advice Free of Cost



WOOD TANKS and VATS

Dye Kettles and Tubs

of any size and shape

NEW ENGLAND TANK AND TOWER CO., Everett Station, BOSTON, MASS.

FILTERS AND WATER SOFTENERS

Hungerford Filters having an aggregate capacity of over ONE HUNDRED MILLION GALLONS per day are now in operation in the textile mills of America

The Filters That Never Require A Renewal of the Filter Bed

HUNGERFORD & TERRY, Inc.

Penna. Bldg., Philadelphia, Pa.

TRADE MARK

TRADE MARK

F. B. WILDMAN

WILDMAN MFG. CO.

MANUFACTURERS OF

Circular Rib Knitting Machinery

Electric Cloth Cutters

AUTOMATIC STOP MOTIONS

Norristown, Penn. - U. S. A.

FRIEDBERGER-AARON MFG. CO.

LEADING MANUFACTURERS

Braids and Edgings

For Trimming Ladies' Ribbed Underwear

OUR MOTTO:

Correct Goods, Right Prices, Prompt Deliveries

Mills: Wayne Junction, Philadelphia

POST OFFICE ADDRESS: LOGAN STATION, PHILADELPHIA

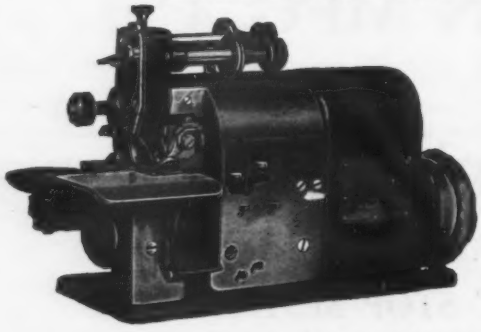
The Merrow

FAST

DURABLE

Light Running

High Speed Overseaming, Overedging and Shell Stitch Machines are



OUR CLASS 60 MACHINES for Trimming and Overseaming in one Operation produce the strongest, best Seams and do it with the greatest economy.

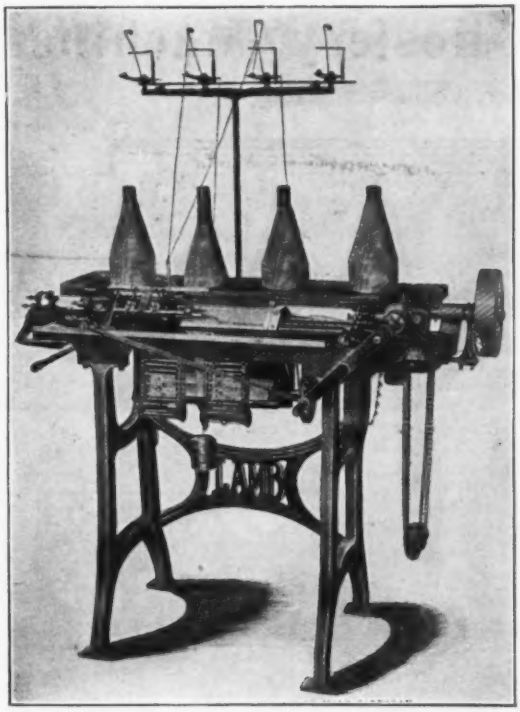
USE STYLE 18 for Horse Blankets. STYLE 17 B or 22 for Bed Blankets. STYLE 35 E SHELL, for Necks and Fronts of Rib Goods, produces the most showy, substantial finish.

Send for Catalogue and Samples.

THE MERROW MACHINE CO. HARTFORD, CONN.

Knickerbocker Building, Sixth and Arch Sts., Phila. 467 Broadway, cor. Grand St., N. Y.
815 West Van Buren St., Chicago, Ill. 1019 E. Baltimore St., Baltimore, Md.

Don't Let the European War Interfere With Your Business



USE

Lamb Knitting Machines

The American Machine
Originated in America in 1856

For the last sixty years the

Lamb Knitting Machines Have Had the Habit of Making Good

No matter where they are used or under what conditions. The fact is due to

their Productive Capacity,
their Simplicity,
their Accessibility

We are prepared to furnish the Knitting Mills of this continent with a superior product and at short notice.

We call your attention to a few of our new improved machines:

Automatic Widener for Sleeves and Collars
Improved Power Machine
Four colors—Automatic 3 needle rack
Drop Needle Machine
Single Plate Sweater Machine
Back Drive Sweater Machine
Improved Sweater Body Machine

Send for particulars

LAMB KNITTING MACHINE CO.

Chicago **Chicopee, Falls, Mass.** **New York**

THE GROSSER KNITTING MACHINE CO.

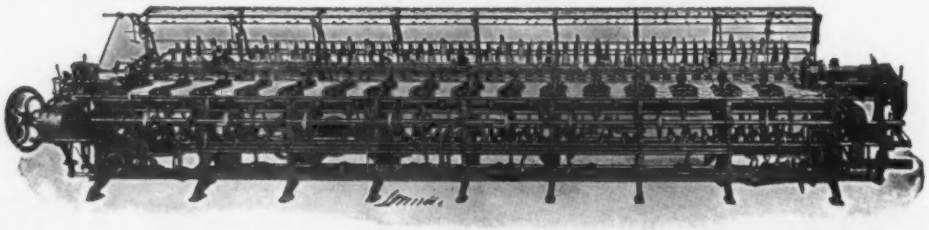
MAX NYDEGGER

Wool Exchange, 260 W. Broadway, New York

ALL SPECIAL MACHINES FOR ANY ARTICLE THAT IS KNIT

Full Fashioned Hosiery Machines

System **G. Hilscher, Chemnitz, Saxony**

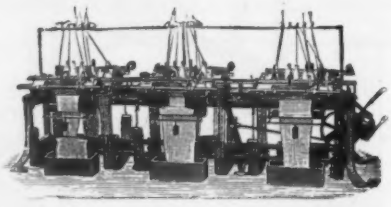


16 Section "COTTON HILSCHER" Machine for Full Fashioned Hosiery, Silk, Cotton, Wool, etc.

Gold Medal, Paris, 1900 — Numerous Patents Covering Special Improvements

GROSSER Flat Knitting Machines

For HAND Power or FULLY AUTOMATIC Power MACHINES. Most productive and best machines for Sweaters, Jackets, Blouses, Wool Hosiery, Gloves, Mittens, Sporting Goods in Plain, Fancy and Jacquard Work, Shaker Articles, etc. Large stock on hand. Power Machines to be seen in operation.



CIRCULAR FRENCH FRAMES

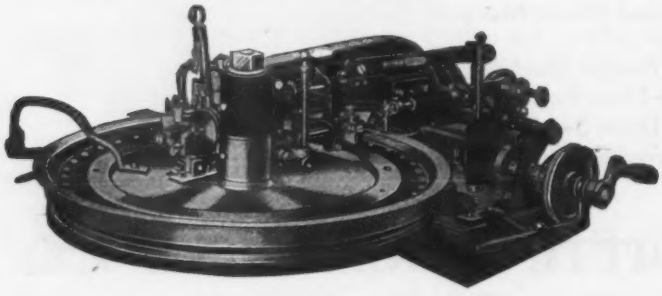
C. Terrot Söhne, Cannstatt, Würt, famous builders of the best Circular Frame for Finest Underwear, Fleece Linings, Gloves, Special á-jour (openwork) Fabrics, etc.

RASHEL MACHINES [Double Rib Warp Knitting Machines.]

For Fancy Goods in largest variety, Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc., in silk, wool, cotton.

THE LOOPER THAT LOOPS!

Two thread lock stitch machine with reliable trimmer and raveller producing *indestructible, flat elastic seam.* No hosiery or underwear plant up to date without this machine.



DIAMOND OVERSEAMERS

for all classes of selvage goods, Full Fashioned Hosiery, Underwear, etc.

FINISHING MACHINES

for Knit Goods of all styles.

WINDERS

for finest yarns.

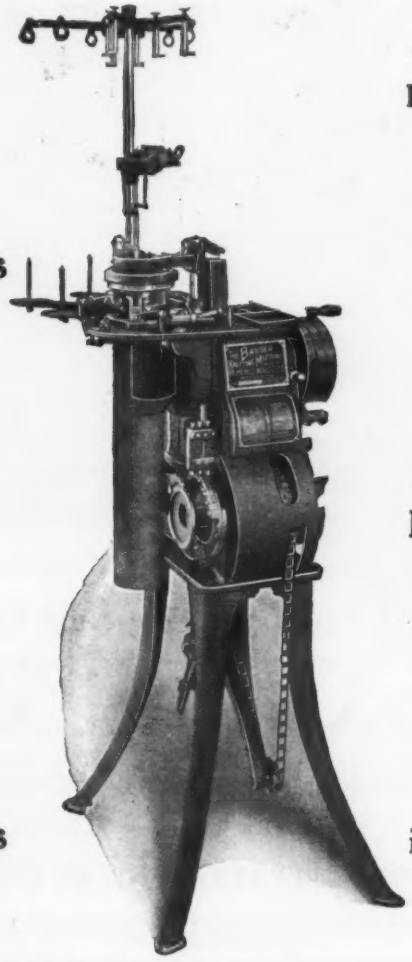
Information, Samples and Specifications at Your Disposition.

NEW MODEL

Banner Full Automatic Hosiery Machine

A FEW OF THE NEW FEATURES

Over **18,000** Banner Machines in successful operation



Average production 100 machines a week

All working parts accessible from *front* of machine

Five Yarn Changing Levers

Automatic Transferring Device

New and *Novel* Device for High Splice and Double Sole Slackening

New Yarn Engaging Device

High Speed in *Heel* and *Toe* Single Pick

Over 4800 machines sold and delivered in 1913 as compared with 3700 in 1912

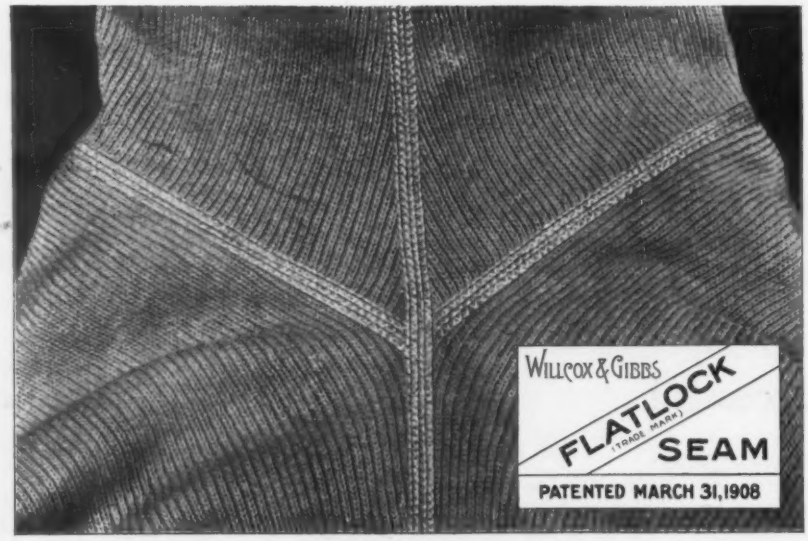
HEMPHILL MFG. CO.

131 Clay Street - - Pawtucket, R. I.

TRADE MARK REG. U. S. PAT. OFF.

FLATLOCK
MACHINE

Domestic and Foreign Patents on Both Machine and Product



Notice the FLATNESS OF SEAM on inside of sleeve under the arm

A Perfect Union of Abutted Cut Edges
Forming a Very Strong, Soft and Smooth

FLAT SEAM

No Thicker Than the Fabric Itself

A Result Never Before Reached

MADE IN ONE OPERATION AND AT HIGH SPEED

"FLATLOCK" samples cheerfully supplied to *Manufacturers, Jobbers and Buyers*
Apply to Department 18

Trade Mark

WILLCOX & GIBBS SEWING MACH CO NEW YORK

Reg. U. S. Pat. Off.

Willcox & Gibbs Sewing Machine Co.

Chief Office **658 Broadway** Corner Bond Street

New York

Full Fashioned Hosiery Machines

—BUILT BY—

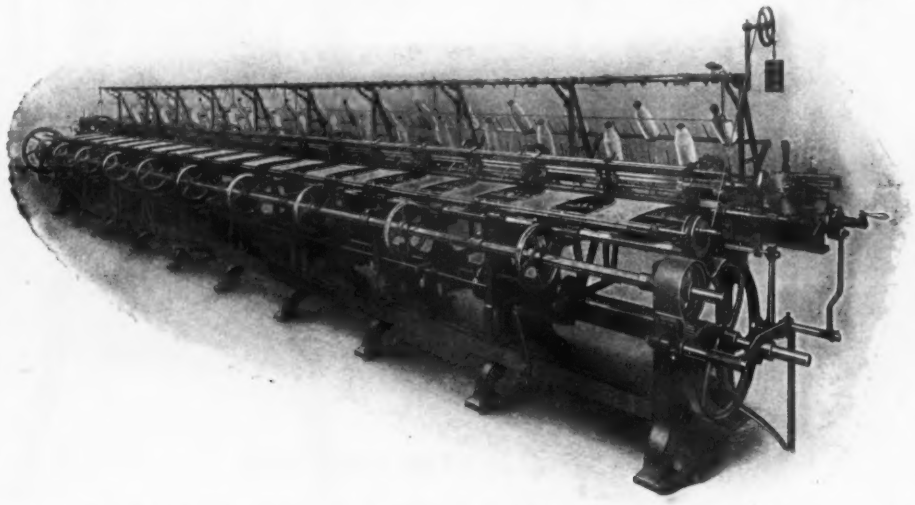
Schubert & Salzer Maschinenfabrik

and their two Branch Works

H. ALBAN LUDWIG and THEODOR LIEBERKNECHT

Chemnitz, Germany

Largest Manufacturers of all Classes of Hosiery Machines



Schubert & Salzer, in addition to the plant of H. Alban Ludwig, have recently acquired the plant of Theodor Lieberknecht and continue to build Full Fashioned Hosiery Machines in each of the three plants, retaining the special features of each individual type and at the same time using on all three machines various patented devices and all the practical attachments known to the trade. These machines are built in all gauges from 14 to 34 needles to the inch and from 12 to 24 sections.

Best Constructed, Most Economical and Productive Machines on the Market

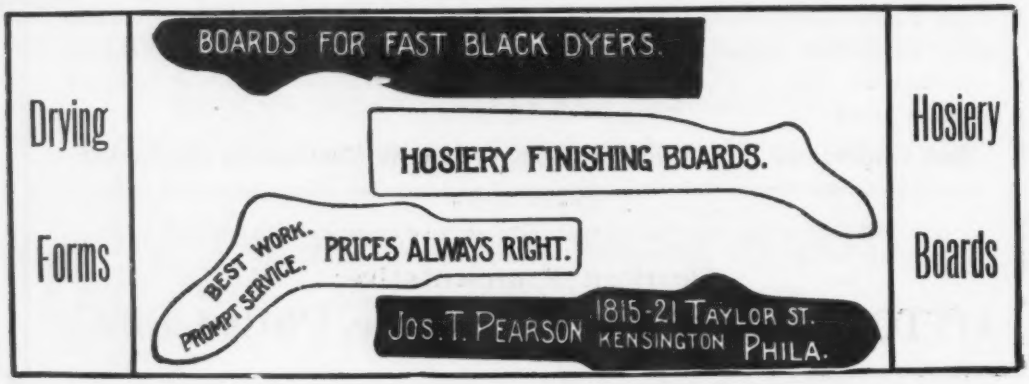
REFERENCES:

All the leading manufacturers of full-fashioned hosiery in this country.

American Representative:

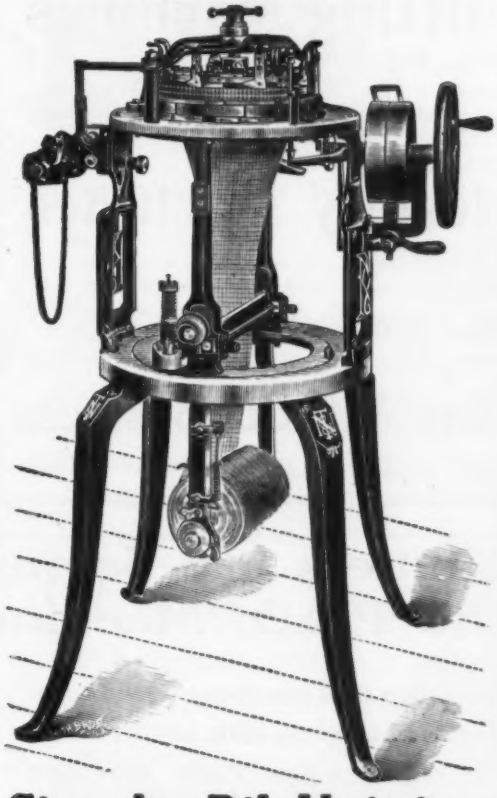
OTTO WALTHER, 507 Bourse, Philadelphia

Union Special
Machine Company's
"Star"-tling
Sensation
THE TANDEM INTERLOCK MACHINE
FLAT SEAM
USE ANY THREAD
STRONG ATTRACTIVE STITCH
SOLD OUTRIGHT
See
FOR RESULTS
Hitch Your Seaming Operations to a
"Tandem Interlock Flat Seam" Machine


Drying
Forms
BOARDS FOR FAST BLACK DYERS.
HOSIERY FINISHING BOARDS.
BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.
JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.
Hosiery
Boards

NYE & TREDICK CO.

718-720 Cherry Street
PHILADELPHIA, PA.



Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

Quality of Fabrics and Production
UNEXCELLED

NYE & TREDICK CO.

1915

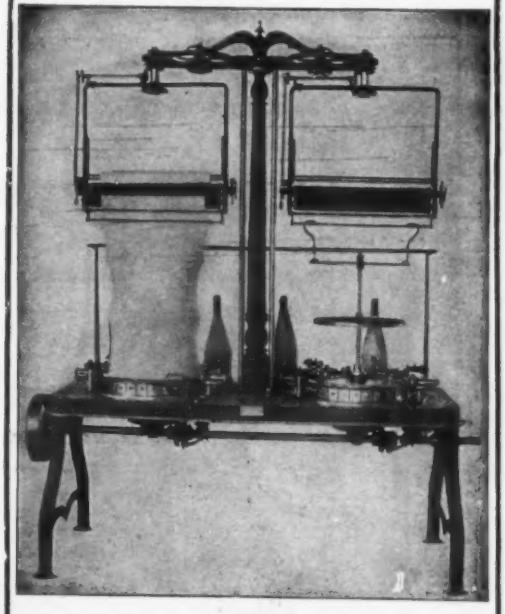
CRANE MFG. CO.

Established 1870 — LAKEPORT, N. H. — Incorporated 1890

Spring and Latch Needle Machines

for both Rib and Plain Work
Economically Producing

A GREAT VARIETY OF FABRICS



Spring Needle Underwear Machine with Automatic Takeup

This machine is made in sizes from 13" to 22" in diameter of any desired gauge, the number of feeds depending on the size of cylinders,

Also built in sizes from 2½" to 32" in diameter for the production of a great variety of fabrics.

Aside from the feeds for plain fabrics the stockinet, eider down and astrachan feeds are superior to any on the market.

Many of these machines are in use in the leading mills.

SOME CRANE FEATURES.

Patent removable hardened Wing Burr Wheels.
Patent Thread Stop Motion can be fitted to 20" and 32" frames and are specially adapted for making fine Jersey Cloth and Stockinet.
Our flat machine is adapted for knitting collarettes.

E. O. SPINDLER

350 Broadway, New York, N. Y.

AGENT FOR

"Dubied" Flat Knitting Machines

For the sweater, etc. trade

BUILT BY

EDWARD DUBIED & COMPANY, Couvet, Switzerland

AND

Full Fashioned Hosiery Machines

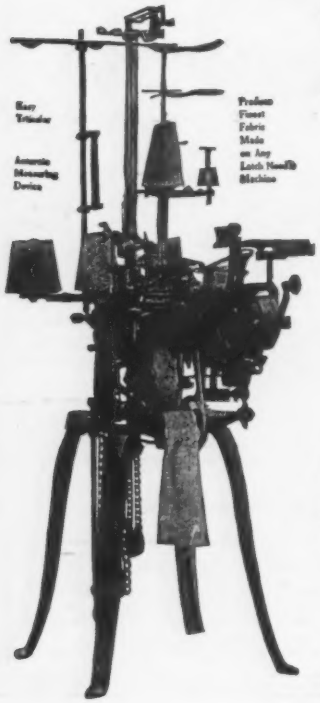
"Cotton System"

BUILT BY

DAVID RICHTER, INC., Chemnitz, Saxony

The War Doesn't Interfere With Our Business

Your inquiry will receive prompt attention



What Knitters are Saying About the "P.&O." Machine

"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P.&O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

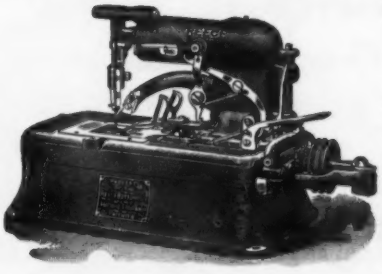
Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

Write for full particulars

PAXTON & O'NEILL

541 N. THIRD ST., PHILADELPHIA, PA., U. S. A.

The Reece Button-Hole Machine



For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

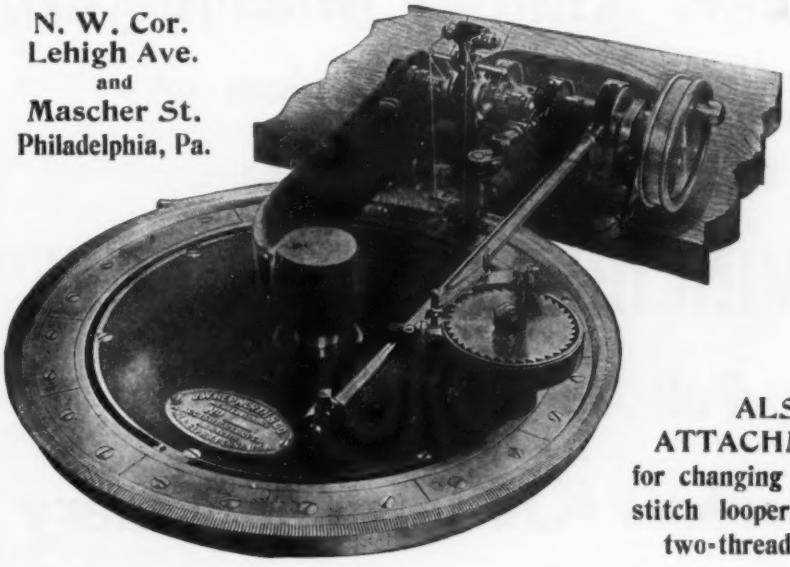
The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

THE REECE BUTTON-HOLE MACHINE CO.

Office and Factory - 500 to 514 Harrison Avenue, Boston, Mass

John W. Hepworth & Company

N. W. Cor.
Lehigh Ave.
and
Mascher St.
Philadelphia, Pa.

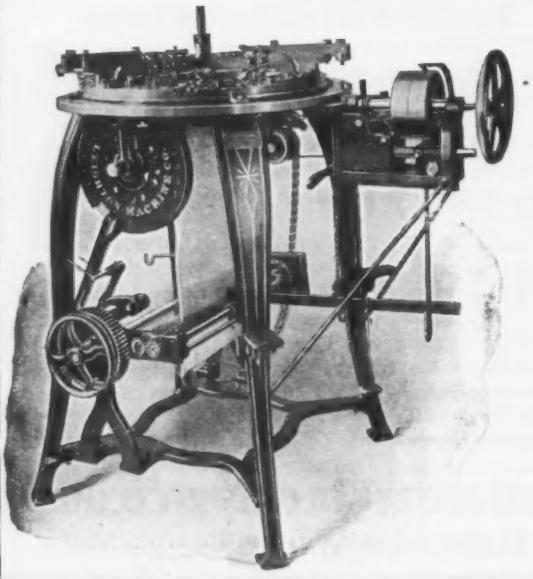


Makers of
Two Thread Elastic Lock Stitch Loopers

ALSO ATTACHMENTS
for changing our single stitch loopers into the two-thread loopers

THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

Means Excellent Stitches with ECONOMICAL OPERATION

For Particulars ask

LEIGHTON MACHINE CO.

Manchester, N. H.

Jenckes Knitting Machine Co.

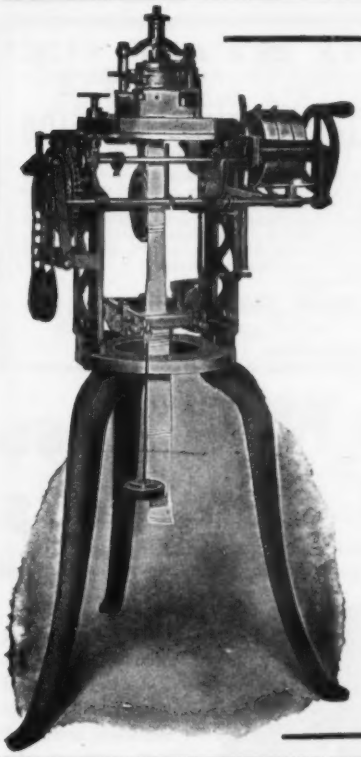
Pawtucket, Rhode Island

Manufacturers of

"INVINCIBLE" and "JENCKES"

Full Automatic Circular

Seamless Knitting Machinery



H. BRINTON COMPANY

213-217 Race Street, Philadelphia, Pa.

BUILDERS OF

Circular Knitting Machinery

of every kind for every purpose

HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

NECKTIE MACHINES

for making all kinds of tubular knitted scarfs.
Write for catalog, prices and samples.

THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
Plain Sweater Coat Machines.
Pineapple Stitch Sweater Machines.
Jersey Sweater Machines.
Plain Binding Machines.
Rotary Jacquard Binding Machines.

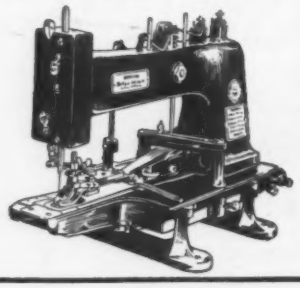
FOR INFORMATION, ADDRESS

STAFFORD & HOLT,

LITTLE FALLS, · NEW YORK, U. S. A.

BUTTONS PUT ON TO STAY ON

No bobbins to wind. Will sew all buttons with any thread. No threads to trim. Saves 90% of the needle breakage.



Elastic Stitch Button Sewing Machine

saves money for manufacturers, and helps them increase the demand for their products. Without increasing the expense to the manufacturer, the Elastic Stitch Button Sewing Machine sews buttons on garments in such a way as to allow for thread shrinkage and to stand the wear and tear of the laundry, as well as giving to the buttons the same uniform finish that the tailor would give, and avoiding, as the tailor does, the drawn down, tight effect that is unavoidable when a two thread machine is used.

Send for proof and "List-of-Users" booklet.

Union Button Sewing Co., Dept., Frederick Osann Co.

394 Atlantic Ave., Boston, Mass. 245 Seventh Ave., New York City

Agents Everywhere

HOW MUCH OF THIS

$10,000,000.00

DO YOU WANT?

About $10,000,000.00 worth of full fashioned stockings are made in America each year.

No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

If you are thinking of making full fashioned goods take up the question with us—as our success depends upon yours, we will prove to you that we can help you before you spend a cent.

TEXTILE MACHINE WORKS

READING, PA.

THE MAKERS OF AMERICAN FULL FASHIONED HOSIERY MACHINES

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

NEW ENGLAND BUTT COMPANY

304 PEARL STREET, PROVIDENCE, R. I.

BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS

SOLID SASH AND CURTAIN CORDS

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Acme Knitting Machine & Needle Company

FRANKLIN, N. H.

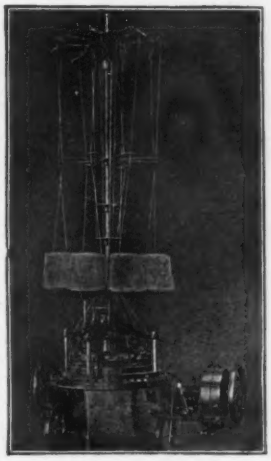
Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers Like our Latch Needles

because we make a superior grade of needles

Philadelphia Office, Bourse Bldg.

CRAWFORD STOP MOTIONS



For all makes and sizes of

Circular Rib Knitting Machines

Twenty Years of Experience and Success

Adapted for **HEAVY SWEATER** yarns as well as **UNDERWEAR** work

Crawford Manufacturing Co.

NEW BRUNSWICK, N. J.

CHARLES COOPER

BENNINGTON, VERMONT

MANUFACTURER OF

Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder, **Spring Needle Cylinder Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders.

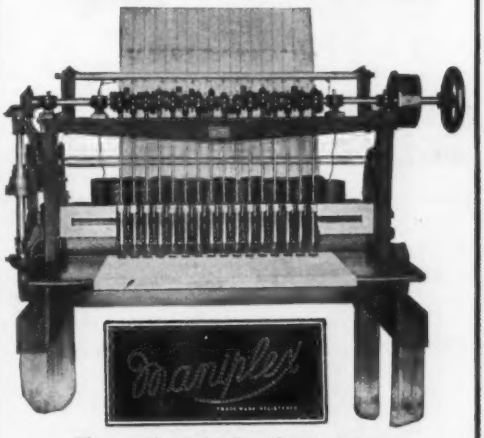
Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.

COLLARETTE ATTACHMENT

American Representative:
G. H. ROGERS
838 Lancaster St., Albany, N. Y.

European Representative:
FELIX LEDERER
1x/4 Schubertgasse, Nr. 22, Vienna, Austria

"Maniplex" Sewing Machines



For Multiple Stitching

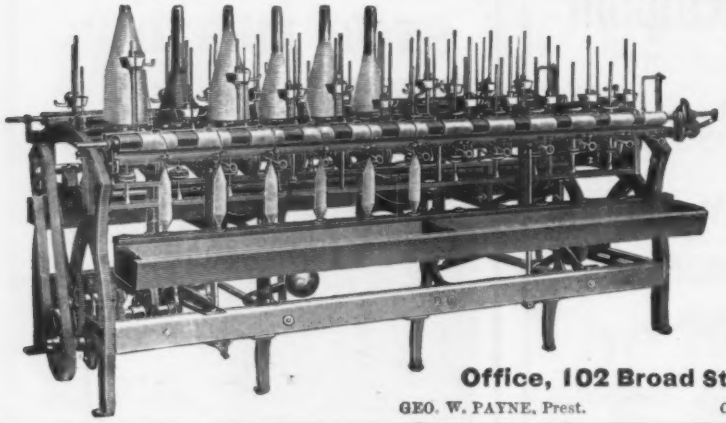
Built for all purposes where a number of rows of stitching are required. ¶ With either form of stitch, single thread chain, double thread chain, or lock stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶ Furnished with any desired number of needles, spacing to suit requirements. ¶ We also build **Paper Slitting Machines** and design special machinery.

L. F. FALES

Walpole, Mass., U. S. A.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



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Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

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Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides. Bolsters and Stops Made and Repaired at Short Notice.

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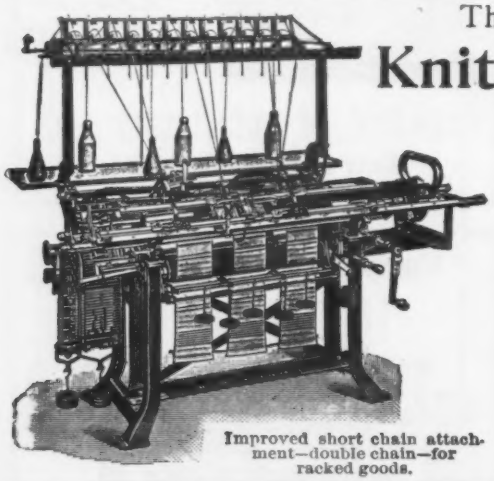

Improved short chain attachment—double chain—for racked goods.

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160,000 Knitting Machines in use all over the Universe

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The cut represents one of our full automatic machines with double chain, short chain attachment, doing away with the long chain and lots of blocks.

Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

For full particulars, needles and supplies for all kinds of knitting machines, write to

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New Jersey Wire Stitcher

Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

Send for Catalogue

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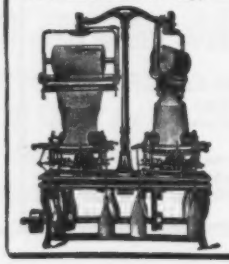
PHILADELPHIA

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.

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Cotton Mills, Woolen Mills, Knitting Mills and Factories need positive protection instantly available. Eureka Hose gives protection.

"Eureka" has the lasting quality and the capacity to resist wear and tear.

Fire Hose for every possible duty.

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Covers every detail of the construction and equipment of plants.

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¶ Can be seen running at all times.

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Several New Features

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It cuts the corners of expense in every way and leads to *more and greater profits.*

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Mail a card for complete information and prices. When in need of special machinery write me.

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We have good stocks, which are being replenished regularly by shipments from Germany through neutral countries. *We can fill your orders promptly.*

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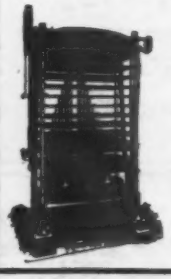

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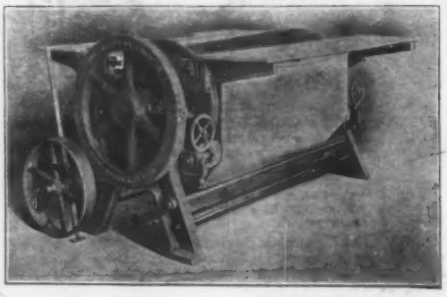

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Capacity and Finish

With two girl operators its record capacity is pressing **six hundred dozen** garments per day **without breaking a button.** With only **one** operator it is **three hundred dozen** per day.

The appearance of the garment when pressed on it is very attractive; the finish cannot be excelled; **many mills say it cannot be equalled** by any press or method of pressing.

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Highest Quality Crucible Wire, Smooth Eyes, Finest Temper, Hand Straightened.

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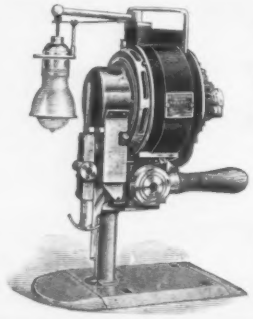

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